U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-295 653

Achieving Irrigation Return Flow Quality Control Through Improved Legal Systems

Resources Administration and Development, Inc, Fort Collins, CO

Prepared for

Robert S Kerr Environmental Research Lab, Ada, OK

Dec 78

United States
Environmental Protection
Agency

Robert S. Kerr Environmental Research
Laboratory
Ada OK 74820

EPA-600/2-78-184
December 1978

Research and Development

PB 295653

EPA

Achieving Irrigation Return Flow Quality Control Through Improved Legal Systems

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

RESEARCH REPORTING SERIES

Research reports of the Office of Research and Development, U.S. Environmental Protection Agency, have been grouped into nine series. These nine broad categories were established to facilitate further development and application of environmental technology. Elimination of traditional grouping was consciously planned to foster technology transfer and a maximum interface in related fields. The nine series are:

1. Environmental Health Effects Research
2. Environmental Protection Technology
3. Ecological Research
4. Environmental Monitoring
5. Socioeconomic Environmental Studies
6. Scientific and Technical Assessment Reports (STAR)
7. Interagency Energy-Environment Research and Development
8. "Special" Reports
9. Miscellaneous Reports

This report has been assigned to the ENVIRONMENTAL PROTECTION TECHNOLOGY series. This series describes research performed to develop and demonstrate instrumentation, equipment, and methodology to repair or prevent environmental degradation from point and non-point sources of pollution. This work provides the new or improved technology required for the control and treatment of pollution sources to meet environmental quality standards.

This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/2-78-184	2.	3. RECIPIENT'S ACCESSION NO. PB295653
4. TITLE AND SUBTITLE ACHIEVING IRRIGATION RETURN FLOW QUALITY CONTROL THROUGH IMPROVED LEGAL SYSTEMS		5. REPORT DATE December 1978 6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) George E. Radosevich and Gaylord V. Skogerboe		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Resources Administration and Development, Inc. Fort Collins, Colorado 80522		10. PROGRAM ELEMENT NO. 1HB617 11. CONTRACT/GRANT NO. Grant No. R-804303
12. SPONSORING AGENCY NAME AND ADDRESS Robert S. Kerr Environmental Research Laboratory-Ada, OK Office of Research and Development U.S. Environmental Protection Agency Ada, Oklahoma 74820		13. TYPE OF REPORT AND PERIOD COVERED Final 14. SPONSORING AGENCY CODE EPA/600/15

15. SUPPLEMENTARY NOTES Related study report: WESTERN WATER LAWS AND IRRIGATION RETURN FLOW by George E. Radosevich

16. ABSTRACT

The key to irrigated agricultural return flow quality control is proper utilization and management of the resource itself, and an accepted tool in our society is the law. This project is designed to develop legal alternatives that will facilitate the implementation of improved water management technologies developed to reduce and control salinity, sediment, nutrients, and other forms of water pollution emanating from agricultural uses of water and other primary agricultural inputs for crop production. Recommendations for Federal and state activities to achieve irrigation return flow quality control include an action program termed the "influent control approach." The basic and required components of such a program are outlined and discussed.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Water quality, irrigation, water law, irrigated land, water pollution, water rights	Legal systems Water law systems 17 western states Water administration State water quality control agencies	68D

18. DISTRIBUTION STATEMENT RELEASE TO PUBLIC	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 314
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE PC A14/MF A01

EPA Form 2220-1 (9-73)

★ U.S. GOVERNMENT PRINTING OFFICE: 1978-657-060/1618

EPA-600/2-78-184
December 1978

ACHIEVING IRRIGATION RETURN FLOW QUALITY CONTROL THROUGH IMPROVED LEGAL SYSTEMS

by

George E. Radosevich
Gaylord V. Skogerboe
Resources Administration and Development, Inc.
Fort Collins, Colorado 80522

Grant No. R-804303

Project Officer

James P. Law, Jr.
Irrigated Crop Production Section
Robert S. Kerr Environmental Research Laboratory
Ada, Oklahoma 74820

ROBERT S. KERR ENVIRONMENTAL RESEARCH LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
ADA, OKLAHOMA 74820

DISCLAIMER

This report has been reviewed by the Robert S. Kerr Environmental Research Laboratory, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the U.S. Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

FOREWORD

The Environmental Protection Agency was established to coordinate administration of the major Federal programs designed to protect the quality of our environment.

An important part of the Agency's effort involves the search for information about environmental problems, management techniques and new technologies through which optimum use of the Nation's land and water resources can be assured and the threat pollution poses to the welfare of the American people can be minimized.

EPA's Office of Research and Development conducts this search through a nationwide network of research facilities.

As one of these facilities, the Robert S. Kerr Environmental Research Laboratory is responsible for the management of programs to: a) investigate the nature, transport, fate, and management of pollutants in ground water; b) develop and demonstrate methods for treating wastewaters with soil and other natural systems; c) develop and demonstrate pollution control technologies for irrigation return flows; d) develop and demonstrate pollution control technologies for animal production wastes; e) develop and demonstrate technologies to prevent, control, or abate pollution from the petroleum refining and petrochemical industries; and f) develop and demonstrate technologies to manage pollution resulting from combinations of industrial wastewaters or industrial/municipal wastewaters.

This report contributes to the knowledge essential if the EPA is to meet the requirements of environmental laws that it establish and enforce pollution control standards which are reasonable, cost effective and provide adequate protection for the American public.

William C. Galegar

William C. Galegar
Director
Robert S. Kerr Environmental
Research Laboratory

PREFACE

This report is a companion study to a project and report entitled Western Water Laws and Irrigation Return Flow. While this report is concerned with an examination of the water quality control laws of the western states and the extent to which the two legal systems (quantity and quality control) interface, the companion study concentrates on a definition and explanation of the state laws for water allocation and distribution in the seventeen western states. A brief interpretive summary of present water laws of each state is included. This report also explores the integration of legal controls with physical/technical realities.

It is suggested that the interested reader refer to both reports for a total picture of western water laws (quantity and quality control), water administration, and potential legal/technical solution to the irrigation return flow quality control issue in the West.

G. Radosevich
G. Skogerboe

ABSTRACT

Water pollution from irrigated agriculture in the West has received major attention during the past five years, primarily as a result of Federal and state endeavors to identify irrigation return flow quality problems and to develop a viable control strategy. The national goal of "cleaner water" emerged as a result of the deterioration of water quality caused by degraded discharges from various sources. Irrigation return flows contribute to the problem through present water management and agricultural practices in the use of water, land and agricultural chemicals. These return flows occur from seepage losses, deep percolation and tailwater runoff that often contain such pollutants as salinity, nitrates and phosphates (or nutrients), sediments, biocides, and bacteria.

The key to irrigated agricultural return flow quality control is proper utilization and management of the resource itself, and an accepted tool in our society is the law. This project is designed to develop legal alternatives that will facilitate the implementation of improved water management technologies developed to reduce and control salinity, sediment, nutrients, and other forms of water pollution emanating from agricultural uses of water and other primary agricultural inputs for crop production.

In spite of several Federal efforts to introduce regulations to control this pollutant discharge, strong resistance and little success summarizes the status. The state agencies, particularly the water quality agencies, are very much concerned with the implementability of any program to control irrigation return flow quality. Most states are relying upon the 208 planning process to handle the irrigation return flow problem, primarily because they consider it to be a non-point source type of problem, or because early in their water quality implementation process, irrigation return flow was not considered a point source. Irrigation return flows were not considered point sources definitively until after the Flannery decision in 1975. The state and local agencies are awaiting the development by EPA of an implementable program.

Three recommendations are made for Federal and state activities to achieve irrigation return flow quality control. Recommendation 1 is an action program for adoption of EPA into subsequent regulations. Recommendation 2 is a proposed course of action to implement the action program. Recommendation 3 identifies research needs. The action program proposed is called the "Influent Control Approach" and requests the states to: 1) designate areas for irrigation return flow quality management and designate the responsible area entity; 2) develop standards and criteria for beneficial use in designated areas; 3) introduce incentives to use water more efficiently; 4) include the element of water quality in new or transferred and changed water rights;

5) adopt and enforce a reporting and recording system for water rights; 6) recognize reasonable degradation from agricultural water use; 7) adopt an Agricultural Practices Act; and 8) promote close cooperation or integration of state water agencies and related functions.

This report was submitted in fulfillment of Grant No. R-804303 by Resources Administration and Development, Inc., under the sponsorship of the U.S. Environmental Protection Agency. This report covers the period January 15, 1976 to September 30, 1977, and work was completed as of September 30, 1977.

CONTENTS

Preface iv
Abstract v
Figures ix
Tables x
Acknowledgments xi

1. Introduction. 1
    Statement of the Problem 2
    Purpose and Objectives of the Project 3
    Research Approach 3

2. Conclusions 9

3. Recommendations 16
    Recommendation 1: Action 17
    Recommendation 2: Implementation 20
    Recommendation 3: Research. 20

4. The Technological - Legal Interface 21
    Development of Irrigation Systems. 22
    Need for Water Control 23
    Irrigation Return Flow Quality as a National Issue 27
    Physical Characteristics of Irrigation Return Flow 29
    Extent of Problem 33
    Constraints to Implementing Technology 35
    Evolution of a Problem 36

5. State Water Quality Law 38
    Background 39
    Water Quality Law 41
    Special Legislation 53
    Related Legislation. 55
    Regulations Affecting Irrigation Return Flow Quality . . . 57
    Summary 60

6. Western Water Administration 62
    Activities of Water Administration Affecting Agriculture 62
    Agency Duties 62
    Status of State Water Administration 65
    Trends and Potentials. 69

7. Efforts to Control Irrigation Return Flow Quality 77
  Background of Federal Pollution Control 78
  Present Federal Approaches 83
  Results from Recent Governmental Investigations. 105
  Present State Activities 114

8. An Alternative Approach to Irrigation Return Flow Quality Control 123
  Philosophy and Criteria for Effective Control. 124
  An Influent Control Approach 126
  Epilogue 138

References 143
Appendices 148

A. State Reports 148
B. State Agencies and Personnel Consulted 296
C. Water Newsletter and Associations 299

FIGURES

Number		Page
1	Impact of Water Management and Agricultural Practices Upon Irrigation Return Flow Quality	11
2	Achieving Irrigation Return Flow Quality Control Through Improved Legal Systems	18
3	Schematic of Irrigation Systems Development	24
4	The Water Delivery, Farm and Water Removal Subsystems	30
5	Types and Evolution of Water Administration Agencies by Three Major Functions	67
6	Water Agencies and Their Major Functions in Montana.	68
7	Water Agencies and Their Major Functions in Texas	70
8	Organization of Water Functions in Colorado	71
9	Utah Water Agencies and Their Functions.	71
10	Organization of Water Agencies in Nevada	72
11	Organization of Water Agencies in Oregon	72
12	Water Agencies and Their Major Functions in California	73
13	Water Agencies and Their Major Functions in Washington	74
14	Theoretical Relationship of Section 402 with Other Regulations	89
15	Overview of NPDES Coverage	92
16	Proposed Timetable	102
17	Proposed Permit Issuance Timetable	103

18 Influent Control Approach to Irrigation Return Flow Quality Management 130

19 The Irrigation Return Flow Quality Problem 140

20 Achieving Irrigation Return Flow Quality Control Through Improved Legal Systems 142

TABLES

Number Page

1 State Special Legislation Affecting Water Quality 54

2 Status of NPDES Delegation in the 17 Western States 91

3 Coverage of Pollution Sources 93

4 Extent of Irrigation Return Flow Quality Problems 115

ACKNOWLEDGMENTS

In the preparation of the report, the authors have received the cooperation and assistance of a great number of people. The guidance of Dr. James P. Law, Jr., Project Officer, Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma, is gratefully acknowledged. We particularly thank our research assistants, Scott McColloch and Dennis Stickley, for the laborious hours spent in law libraries identifying information contained in the state reports found in Appendix A.

Of utmost importance to an effort of this nature is the cooperation and feedback from the personnel in state agencies involved with the day-to-day activity of carrying out the law and regulations. We are deeply indebted to the many people we visited and communicated with by correspondence and telephone in the water quality and quantity agencies of the seventeen western states. The interest and enthusiasm they showed through their willingness to provide materials, meet for numerous hours, and review the project reports illustrates their concern with the irrigation return flow quality control problem and the desire to serve the public in any effort to formulate an implementable program to resolve the federal-state nature of this particular problem and lead to improved water quality. Because it would be difficult to identify all those in the state agencies who so generously provided comments and information, the reader is requested to see the list set out in Appendix B of this report.

SECTION 1: INTRODUCTION

CONTENTS

STATEMENT OF THE PROBLEM 2

PURPOSE AND OBJECTIVES OF THE PROJECT. 3

RESEARCH APPROACH. 3

  Status of Problem and Control 3
  Development of Solutions. 4
  Literature Search and Classification. 5
  Citations 7
    Constitutional Provisions. 7
    Cases. 8

SECTION 1

INTRODUCTION

STATEMENT OF THE PROBLEM

In 1972, the Federal Government took a decisive step forward in attempting to achieve cleaner water in our Nation's streams and waterways with the passage of the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500. This action placed the Federal Government in a preemptive position to control discharge to waters of the United States including territorial seas. The amendments culminated from a succession of charges since the first comprehensive water pollution control act was passed in 1948. The new strategy for control under the 1972 Act included use of effluent discharge limitation standards instead of sole reliance upon water quality standards, a permit system for point-source dischargers, target dates for implementation of technological practices to bring discharges up to the limitations set, and a series of land and regional planning and management efforts.

To carry out this law, the Environmental Protection Agency has promulgated regulations for the permit program to cover various categories of point source discharges. One of the categories includes irrigation return flows. Salt loading, sediment and nutrients in the streams and rivers have reduced effective utilization of water in several western river basins at a time when demands for suitable quantities of water for a wide range of uses have increased enormously from regional growth and improved standards of living. In the Colorado River Basin, water users in Mexico and the Lower Basin states are beginning to feel the economic effects of salinity concentrations in the river and to recognize the external diseconomies from degraded irrigation return flows. Treaty and compact commitments are being examined and questions of responsibility are being raised.

Water pollution from irrigated agriculture in the West has received major attention during the past five years, primarily as a result of Federal and state endeavors to identify irrigation return flow quality problems and to develop a viable control strategy. But, in spite of several efforts to introduce control regulations for this pollutant discharge, strong resistance and little success summarizes the status.

To assist the Federal Government in its efforts to control water pollution, a national research and development program was created by EPA to find practical and economical solutions to control salinity, sediment and nutrient concentrations introduced into our river systems through irrigation return flows. Research and demonstrations in selected areas of the western states are now disclosing appropriate and feasible water management technologies, but implementation still remains questionable if underlying institutional constraints remain unchanged.

The key to control of irrigated agricultural return flows is proper utilization and management of the resource itself, and an accepted tool in our society is the law.

PURPOSE AND OBJECTIVES OF THE PROJECT

This project is designed to develop legal alternatives that will facilitate the implementation of improved water management technologies developed to reduce and control salinity, sediment, nutrients, and other forms of water pollution emanating from agricultural uses of water and other primary agricultural inputs for crop production.[1] To accomplish this goal, four major objectives were delineated and are addressed:

1. The water quality control laws relevant to irrigated agriculture for the seventeen western states are described to include: a) statutes; b) regulations; and c) implementation organizations (see Section 5).
2. The degree of interface of the law between water quantity allocation and management and water quality control is defined (see Section 6) to include a summary of present state efforts to control irrigation return flow quality (see Section 7).
3. The characteristics of the irrigation system (consisting of three subsystems--water delivery, on-farm use, and water removal) and appropriate technological solutions for achieving irrigation return flow quality control are to be related to the legal systems for water quantity and quality control found in the seventeen western states (see Section 4).
4. Modifications and enactments affecting both parameters of the legal system at the state and federal level are proposed in order to achieve irrigation return flow quality control (see Sections 7 and 8).

RESEARCH APPROACH

Status of Problem and Control

The history of EPA efforts to formulate permit program regulations for irrigation return flows is set out in Section 7 of this report. Events were changing rapidly at the federal level during 1975 and 1976. Regulations were promulgated in 1973 excluding certain return flows, then overturned in the famous Flannery Decision (NRDC v. Train, 396 F. Supp. 1393, 7 ERC 1881, D.D.C. 1975). New regulations were proposed in 1976 and were still being reviewed by the state water quality agencies during the course of this investigation.

---

[1] A companion study by G. Radosevich entitled Western Water Laws and Irrigation Return Flow Quality Control is available (see Preface). That report contains a description of the water quantity laws of the 17 western states.

In the meantime, some states adopted legislation allowing them to carry on the NPDES program, others assisted the EPA Regional Offices in implementing the program, while still others did nothing.

To effectively and realistically prepare alternative approaches to quality control of irrigation return flows, it was necessary to determine by interview how the program was being accepted in each state and what problems were being encountered in implementing the regulations. This was done through pre-arranged visits with state water quantity and quality agency personnel in charge of permits, monitoring, water allocation, and in some cases water planning and development. States in Group One through Four were visited and those of Group Five were conferred with by conference telephone calls. Appendix B contains the list of state agencies and personnel contacted and visited. Again, the enthusiastic exchanges that took place reflect the genuine concern of these states regarding the irrigation return flow quality control problem. Most often the enthusiasm was not to earnestly engage in control, but rather concern over why the program was formulated, what it really was, and how it could be employed effectively. The meetings were informal and followed a pre-structured interview guide. The topics discussed included:

1. Extent of the irrigation return flow problem in the state.
2. Approaches to irrigation return flow quality and quantity problems.
3. Extent of control and action taken.
4. Legal authority for action taken.
5. Water users affected.
6. Agency resources.
7. Interface with other state agencies.
8. Attitudes toward federal legislation.
9. Reaction to alternatives--an influent control approach.

Development of Solutions

The fourth objective of the project required the preparation of modifications or enactments to either or both water quantity and quality control laws in order to achieve irrigation return flow quality control. An approach to improving the quality of receiving waters of irrigation return flow was being formulated from the inception of the project as problem areas and constraints in water laws and their operation were identified. Likewise, the project investigators weighted and incorporated many suggestions by state agency personnel and successful state practices. One of the underlying convictions to developing a workable solution for this particular problem is to utilize and build on existing concepts, practices and organizations as much as possible in order to facilitate understanding, acceptance and ease of implementation. The result is the Influent Control Approach described in Section 8.

Literature Search and Classification

This project is an interdisciplinary attempt to examine the legal and physical/technical aspects of irrigation return flow quality. As such, orthodox approaches applied by either discipline alone must be modified to accommodate a broader perspective of the issue and analysis. It also requires an almost constant assurance that terminology, meaning and understanding are consistent.

The initial task was a systematic review of source material and the development of the parameters of the literature classification system. Because the project heavily emphasizes the legal dimensions of the water quality problem, the sources of materials and tools to identify them were primarily of the legal nature. To insure that all relevant materials were identified for this project, the traditional criteria for classifying legal material was applied. These materials fall into three categories: primary, secondary and books of index. The primary authorities are those sources most persuasive to the courts, i.e., statutory materials and judicial decisions. Secondary authorities consist of legal encyclopedias, texts and periodicals. The books of index are the tools for definitely researching and identifying judicial decisions and law review articles such as the digests for reporter systems and Index to Legal Periodicals. Non-legal reference sources included state and federal agency and consultant reports, university studies, periodicals, newspaper accounts, etc.

Upon completion of the initial literature review and classification of materials identified as relevant, a more precise research plan was formulated to gather additional information, analyze the data, and present it in a logical format. This plan consisted of three components: preparation of state reports on water quality statutes and administrative procedures, determination of state and federal implementation status of P.L. 92-500 regarding irrigation return flows, and formulation of alternatives to irrigation return flow quality control and preparation of the final report.

State Reports

In order to determine a state's ability to carry out water quality control for irrigation return flows, it was necessary to prepare state-of-the-art reports on the water quality laws and related matters for each of the seventeen western states. In compliance with Objective 1 of this study, all state water quality statutes and relevant judicial decisions and agency regulations were identified and obtained for subsequent analysis.

Appendix A contains the individual state reports on water quality for each of the seventeen western states. Each report is coded by a number alphabetically assigned the states as follows:

Code	State	Code	State	Code	State
1	Arizona	7	Nebraska	13	S. Dakota
2	California	8	Nevada	14	Texas
3	Colorado	9	N. Mexico	15	Utah
4	Idaho	10	N. Dakota	16	Washington
5	Kansas	11	Oklahoma	17	Wyoming
6	Montana	12	Oregon		

The reports follow a systematic format for uniformity and comparative analysis between states. The first digit refers to the state code number assigned above. The second digit refers to the major topic and the third refers to the first subtopic. Reference in the main body of this report to state material is cited by this digit system. The outline for each state report is as follows:

1. Summary of Water Quality Laws
    - 1.1 Background
    - 1.2 Policy
    - 1.3 Classification
    - 1.4 Standards
    - 1.5 Permit System
    - 1.6 Sanctions and Enforcement Measures
2. Administration of the Laws
3. Special Legislation
4. Related Legislation
5. Summary of Regulations Affecting Agriculture
6. Summary of Case Law
7. Information Sources

Preparation of the draft state reports was handled in such a fashion that it allowed early testing of the report outline and use of data gathered. The states were placed into five groups:

Group One: Colorado, Nebraska, Utah, Wyoming.
Group Two: New Mexico, Oklahoma, Texas.
Group Three: Idaho, Oregon, Washington.
Group Four: Arizona, California, Nevada.
Group Five: Kansas, Montana, North Dakota, South Dakota.

This grouping allowed the principal investigators to visit initially the closest state water quantity and quality agencies (Group One) in order to test the draft outline for conducting the state water agency interviews, determine whether or not there were additional source materials pertinent to this study, and evaluate the extent of activities in irrigation return flow quality control.

Part of the data gathered for the state reports was in response to correspondence requesting: 1) agency rules and regulations for carrying out the state's water quality laws or related to control over exercise of water rights; 2) organization charts; and 3) relevant reports such as state water plans, section 303(e) reports, etc. Information on state incentive programs for water use efficiency and sediment control was also requested.

The materials and responses received were indicative of the state concern in this topic. Without exception, the state agencies provided information valuable to the study. The materials received are cited in the Information Sources section of the state reports (Appendix A).

Citations

As an alternative to the usual legal practice of placing citations at the end of the report or page in footnote or end note fashion, they are contained in the text. This method is adopted to enable the reader, regardless of discipline, to use the references to his best advantage. For citation of cases and statutory materials, the following procedure is applied:

> i.e., The East Bay Utility Department was formed and functions under the Municipal Utility District Act (Pub. Util. Code, div. 6, §11501, et. seq.). In Ivanhoe II, the court noted that Water Code Section 23195 authorized irrigation districts to enter into contracts with the United States (Ivanhoe Irr. Dist. v. All Parties, 53 Cal. 2d 692 at p. 706, 1960). It also noted several sections of the Water Code are contrary to federal law (Id. at p. 706).

The format used throughout this report for citing constitutional and statutory provisions, cases and other references is described below.

Constitutional Provisions--
I.e., Arizona: Ariz. Const. Art. XVII, Sec. 1.

State Statutes--

#State	Statute Title	Abbr.	Example
1. Arizona	Arizona Revised Statutes	A.R.S.	A.R.S. Sec. 45-107
2. California	California Water Code	C.W.C.	C.W.C. Sec. 1240
3. Colorado	Colorado Revised Statutes	C.R.S.	C.R.S. Sec. 38-6-201
4. Idaho	Idaho Code Annotated	I.C.A.	I.C.A. Sec. 42-204
5. Kansas	Kansas Statutes Annotated	K.S.A.	K.S.A. Sec. 82a-713
6. Montana	Revised Code of Montana	R.C.M.	R.C.M. Sec. 89-2917
7. Nebraska	Reissue Revised Statutes of Nebraska	R.R.S.N.	R.R.S.N. Sec. 46-201
8. Nevada	Nevada Revised Statutes	N.R.S.	N.R.S. Sec. 533.355
9. New Mexico	N. Mexico Statutes Annotated	N.M.S.	N.M.S. Sec. 75-1-35
10. N. Dakota	N. Dakota Century Code Annotated	N.D.C.	N.D.C. Sec. 61-04-14
11. Oklahoma	Oklahoma Statute Annotated	O.S.A.	O.S.A. 82 Sec. 1205
12. Oregon	Oregon Revised Statutes	O.R.S.	O.R.S. Sec. 537.250
13. S. Dakota	S. Dakota Compiled Laws Annotated	S.D.L.	S.D.L. Sec. 46-5-65
14. Texas	Vernon's Texas Code Annotated Water	T.C.A.	T.C.A. Sec. 5.001
15. Utah	Utah Code Annotated	U.C.A.	U.C.A. Sec. 73-3-18
16. Washington	Revised Code of Washington	R.C.W.	R.C.W. Sec. 90.48.162
17. Wyoming	Wyoming Statutes Annotated	W.S.A.	W.S.A. Sec. 41-206

Where other state statute compilations are used, a full citation is provided. States also have yearly session laws. These laws are cited, i.e., Colo. S. L. and date. Where the law has been codified into the statutes and the date of enactment is significant, this reference will be made as follows: i.e.: C.R.S. Sec. 38-6-201, L. 1974, meaning enactment of 1974.

Cases--

The standard system for case citations is followed by both federal and state decisions. State decisions have both a reference to a state reporter and the West National Reporter for the region. The state citations provide the volume, state and page, i.e.: 437 Ariz. 526, respectively, and the National Reporter system provides the volume, reporter and page, i.e.: 321 P.2d. 726, respectively, meaning volume 321, Pacific Reporter 2nd Series, page 726. The national reporters for the seventeen western states are:

Reporter	States	Example Citation
Pacific Reporter	Arizona, California, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, Oklahoma, Oregon, Utah, Washington, Wyoming	726 P.2d 324
North Western	North Dakota, South Dakota, Nebraska	426 N.W. 78
South Western	Texas	126 S.W. 2d 900

The date of the decision follows the citation. Thus, a complete citation would appear as follows: Jones v. Smith (78 Ariz. 563, 126 P. 728, 1935).

Other References--

The procedure used for reference to published works is as follows:

i.e., ____________________ (Jones, 1947).
i.e., "____________________" (Jones, p. 52, 1947).
i.e., ____________________ (A Legislative History..., p. 693, 1975).

SECTION 2: CONCLUSIONS

CONTENTS

General (1, 2, and 3) 10

State Agencies' Activities (4) 10

State Legal Authority to Control Return Flow (5) 12

State Control Programs' Resources (6) 13

State Organizational Arrangement (7) 13

State Agency Opinion vs Federal Law (8) 13

Irrigation Return Flow Control Objectives (9) 14

Irrigation Return Flow Control Criteria (10) 14

SECTION 2

CONCLUSIONS

1. The national goal of "cleaner water" emerged as a result of the deterioration of water quality caused by degraded discharges from various sources. Irrigation return flows contribute to the problem through present water management and agricultural practices in the use of water, land and agricultural chemicals. These return flows occur from seepage losses, deep percolation and tailwater runoff that often contain such pollutants as salinity, nutrients, sediments, biocides, and bacteria (see Figure 1).

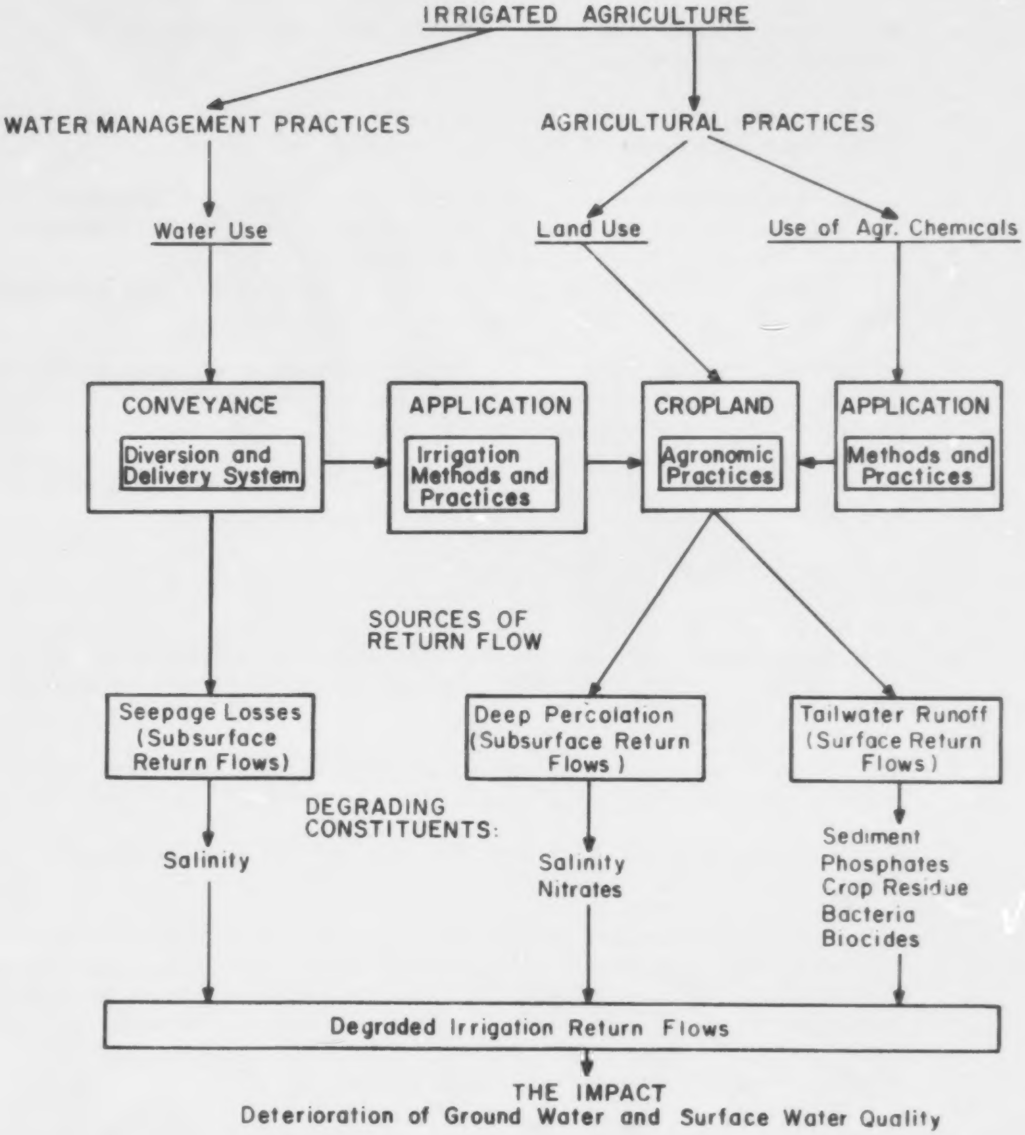
2. There have been rapid changes and an accelerating awareness and interest in irrigation return flow during the past five years.

3. With respect to the extent of the irrigation return flow problem, there are areas throughout the western part of the United States that have been identified, primarily because they were obvious or there have been some problems associated with downstream beneficial uses of water. However, there are undoubtedly many areas that have not been identified, primarily because irrigation return flow quality control has not been a high priority of the state water quality agency activities. Also, it is less likely that water quality problems from subsurface return flows will be as readily identified compared to surface return flows which are more visible.

4. The state agencies, particularly the water quality agencies, are very much concerned with the implementation of any program to control irrigation return flow quality. Regarding current activities for resolving irrigation return flow problems:

    a. Several permits have been issued by various agencies under the previous NPDES regulations issued by EPA in 1972. In most cases, these permits only included monitoring and not control. California, however, has modified that permit program to a joint permit approach in which all entities within a given area are allowed to cosign on the permit for monitoring of irrigation return flows, which are not classified as either point or non-point pollution sources.

    b. Most states are relying upon the 208 planning process to handle the irrigation return flow problem, primarily because they consider it to be a non-point source type of problem, or because early in their water quality implementation process, irrigation return flow was not


IRRIGATED AGRICULTURE
WATER MANAGEMENT PRACTICES
AGRICULTURAL PRACTICES
Water Use
Land Use
Use of Agr. Chemicals
CONVEYANCE
Diversion and Delivery System
APPLICATION
Irrigation Methods and Practices
CROPLAND
Agronomic Practices
APPLICATION
Methods and Practices
SOURCES OF RETURN FLOW
Seepage Losses (Subsurface Return Flows)
Deep Percolation (Subsurface Return Flows)
Tailwater Runoff (Surface Return Flows)
DEGRADING CONSTITUENTS:
Salinity
Salinity
Nitrates
Sediment
Phosphates
Crop Residue
Bacteria
Biocides
Degraded Irrigation Return Flows
THE IMPACT
Deterioration of Ground Water and Surface Water Quality

(Radosevich & Skogerboe 1977)

Figure 1. Impact of Water Management and Agricultural Practices Upon Irrigation Return Flow Quality

considered point sources definitively until after the Flannery decision in late 1974.

c. Most state agencies are awaiting the development by EPA of an implementable program.

d. In a few instances, the waste statutes and beneficial use provisions have been used to curtail excessive tailwater.

e. In the Yakima Valley, the Department of Ecology, in cooperation with the Soil Conservation Service and the water users, has set up a pilot project to demonstrate to local farmers sediment control measures, and from this pilot project they will hopefully develop a program that can be implemented throughout the Valley.

f. In the Wellton-Mohawk Irrigation and Drainage District, the Soil Conservation Service has implemented a program of improved on-farm water management practices, which relies upon economic incentives to achieve the goals of salinity control. These practices are accomplished on farmers' fields under a cost-sharing arrangement in which the Federal Government pays 75 percent of the costs.

5. Legal authority commonly used to control irrigation return flow varies as follows:

   a. There have been ten states that have adopted an NPDES program which would also include control of irrigation return flows as a point source.

   b. Most states rely upon the water quality law and the water quality standards to control significant problem areas.

   c. A few states have adopted specific regulations for irrigation return flows.

   d. The power and authority under the water quantity laws--for example, the waste and beneficial use provisions--are not used to their fullest extent, primarily because of the lack of coordination between the water quantity and quality agencies and also because the water quantity agencies do not enforce the law for concern over the adverse reaction from their constituency.

   e. There is a conditional exclusion of irrigation return flow in: 1) New Mexico's statutory recognition of reasonable degradation; and 2) Montana's definition of naturally occurring pollution.

   f. There is authority in Nevada under its duty of water provision which allows the state agency the flexibility to actually determine what quantity of water is necessary to irrigate various crops under the particular climatic and soil conditions in that area.

6. State agency resources to carry out an irrigation return flow program range accordingly:

   a. California is about the only state that has developed an appropriate staff to implement a program.

   b. Some states have one or two agricultural engineers on their water quality agency staff.

   c. Most states are inadequately staffed and look to the SCS to provide assistance; however, there is a universal feeling that the SCS is presently not capable of providing the necessary assistance.

   d. Many of the states are inadequately staffed because irrigation return flow quality control is a low priority with the state.

7. In controlling irrigation return flows, there is a wide variation in organizational arrangements and cooperation among state agencies. The variation ranges from total integration to cooperation for information only:

   a. Washington is the only western state having total integration in which all three functions--water quantity, quality and development --are under the jurisdiction of one state agency, the Department of Ecology. The second variation occurs in California, in which water quantity and quality functions are under the State Water Resources Control Board, and the Department of Water Resources has the planning and development functions.

   b. The joint committee type is exemplified by the Pollution Control Coordination Board in Oklahoma, and the Water Policy Review Board of Oregon.

   c. Regularly scheduled liaison type meetings between various state agencies to coordinate their activities, such as the monthly "interdepartmental conference" of Wyoming.

   d. A limited, non-structured communication that occurs only when particular problems arise.

   e. Perhaps the most general are those states in which cooperation exists only to the extent of exchanging information.

8. Attitudes toward federal legislation:

   a. There was a universal negative reaction to EPA's earlier permit program. Not only have state agencies felt the past program was not implementable, but there was strong opposition expressed by farmer-water interest groups to any permit-type program.

   b. Many states expressed a strong opinion that they had been left dangling by EPA when this program was curtailed, that consequently led to the development of a credibility problem between the state agency and the water users.

   c. There is almost a universal opinion among the state agencies that the EPA general permit program (40 C.F.R. 124, 41 F.R. 28493, July 12, 1976) will have little to offer in the way of water quality benefits.

   d. Most states, partly because of a lack of staff to really address the problems of irrigation return flow, are awaiting the development of a program by EPA that would be truly implementable with water users.

9. Based upon an examination of past efforts to carry out programs affecting irrigation return flows and the objectives of the federal water pollution legislation:

   a. The ultimate goal to be achieved by federal and state agencies should be improved water quality by way of improved water management.

   b. Any program to attain this goal should promote social and economic well-being through cooperative action.

   c. Direct efforts to attack the problem of irrigation return flow quality in a state should only take place after the problem has been identified by location and extent.

   d. Voluntary compliance is more desirable than forced or involuntary compliance in implementing a management or control program.

10. An implementable and sustaining approach to irrigation return flow quality control must meet the following criteria:

   a. result in improved water management practices and improved agricultural practices;

   b. prevent social disruption and polarization between water users (e.g., individuals, companies and districts) and state and federal agencies;

   c. be palatable to water users;

   d. be feasible, flexible and allow for state agency discretion in working with local water users;

   e. improve the credibility of state and federal agencies;

   f. utilize existing institutions (e.g., laws and organizations) and accepted concepts (e.g., designation of problem areas such as critical ground water basins, beneficial use and duty of water) as much as possible.

g. adjust the roles of local water entities, such as irrigation districts, soil conservation districts, drainage districts, etc., to become a more integral part of irrigation-related water pollution control.

SECTION 3: RECOMMENDATIONS

CONTENTS

RECOMMENDATIONS. 17

RECOMMENDATION 1: ACTION. 17

RECOMMENDATION 2: IMPLEMENTATION. 20

RECOMMENDATION 3: RESEARCH. 20

SECTION 3

RECOMMENDATIONS

Three recommendations are made for federal and state activities to achieve irrigation return flow quality control. Recommendation 1 is an action program for adoption by EPA into subsequent regulations. Recommendation 2 is a proposed course of action to implement the action program. Recommendation 3 identifies research needs.

RECOMMENDATION 1: ACTION

It is recommended that EPA adopt an Influent Control Approach for irrigation return flow quality control. The Influent Control Approach is designed to improve water quality by reducing excessive seepage, tailwater runoff and deep percolation, reducing sediment in return flows through erosion control and reducing chemical concentrations in return flows through licensing and/or control over application of pesticides and fertilizers. Since irrigation return flow quality problems differ from one irrigation system to another, the approach provides the latitude to introduce change and control according to the nature of the local problem, without requiring unnecessary compliance by those irrigators outside problem areas.

The Influent Control Approach (ICA) is based upon the assumption that improved water management (IWM) plus improved agricultural practices (IAP) will significantly contribute to improved water quality (IWQ):

$$\text{IWM} + \text{IAP} = \text{IWQ}$$

and the conclusion that best management practices (BMP) and best agricultural practices (BAP) will yield irrigation return flow quality control (IRFQC), which in turn contributes significantly to the national goal of cleaner water through improved water quality:

$$\text{BMP} + \text{BAP} = \text{IRFQC} \longrightarrow \text{IWQ}.$$

The Influent Control Approach consists of eight specific components. The first six components pertain to improving local water management, with components 1 and 2 having application in the problem area only and components 3 to 6 having statewide jurisdiction. Component 7 pertains to land use and chemical applications affecting water quality and has statewide jurisdiction. Component 8 focuses upon the functional ability of agencies to carry out the program (see Figure 2). The Influent Control Approach requests the states to:

A SOLUTION:

An Influent Control Approach (ICA)

ASSUMPTION:

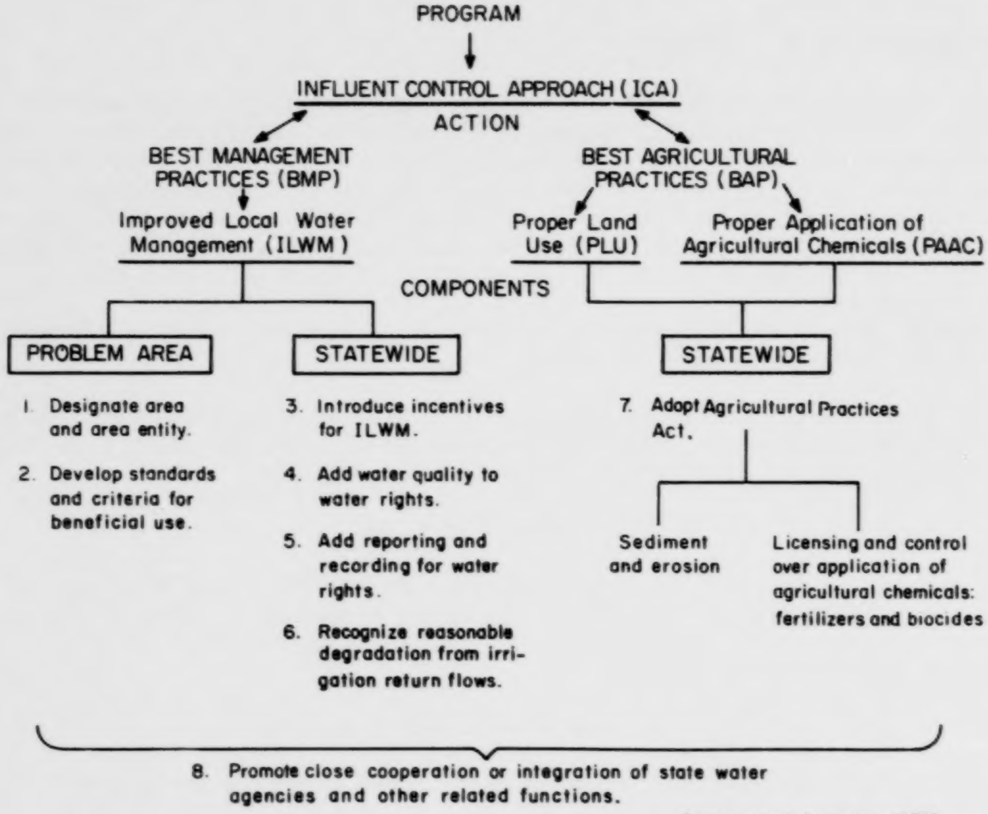
Improved Agricultural Practices + Improved Water Management = Improved Water Quality
(IAP + IWM = IWQ)

CONCLUSION:

Best Management Practices + Best Agricultural Practices = Irrigation Return Flow Quality Control
(BMP + BAP = IRFQC → IWQ)

DEFINITIONS:

BMP = Improved Local Water Management (ILWM)
BAP = Proper Land Use (PLU) and Proper Application of Agricultural Chemicals (PAAC)


PROGRAM
INFLUENT CONTROL APPROACH (ICA)
ACTION
BEST MANAGEMENT PRACTICES (BMP)
BEST AGRICULTURAL PRACTICES (BAP)
Improved Local Water Management (ILWM)
Proper Land Use (PLU)
Proper Application of Agricultural Chemicals (PAAC)
COMPONENTS
PROBLEM AREA
STATEWIDE
STATEWIDE
1. Designate area and area entity.
2. Develop standards and criteria for beneficial use.
3. Introduce incentives for ILWM.
4. Add water quality to water rights.
5. Add reporting and recording for water rights.
6. Recognize reasonable degradation from irrigation return flows.
7. Adopt Agricultural Practices Act.
Sediment and erosion
Licensing and control over application of agricultural chemicals: fertilizers and biocides
8. Promote close cooperation or integration of state water agencies and other related functions.

(Radosevich & Skogerboe, 1977)

Figure 2. Achieving Irrigation Return Flow Quality Control Through Improved Legal Systems

1. Designate areas for irrigation return flow quality management, designate the responsible area entity, and where necessary, provide sufficient legislative authority so that the local entity can assume responsibility.

2. Develop standards and criteria for beneficial use in designated areas.

3. Introduce incentives to use water more efficiently.

4. Include the element of water quality in new or transferred and changed water rights.

5. Adopt and enforce a reporting and recording system for water rights.

6. Recognize reasonable degradation from agricultural water use.

7. Adopt an Agricultural Practices Act.

8. Promote close cooperation or integration of state water agencies and related functions.

The Influent Control Approach is premised upon ten specific assumptions:

1. Achieving the goals of P.L. 92-500, the Federal Water Pollution Control Act of 1972, and policies of federal and state laws to improve the use of our national resources is highly desirable.

2. The concept of property rights in water and other constitutional guarantees will be maintained.

3. The legal procedures of the judiciary and agencies will be utilized.

4. Improved agricultural practices and improved water management will result in improved water quality.

5. Irrigation return flow problems and appropriate solutions to these problems are site specific.

6. Water users (farmers) will respond when it has been demonstrated that there is a problem to which they are contributing.

7. Technical and legal solutions to identified problems must be appropriate and viable (technically sound, economically feasible, legally implementable, and socially acceptable).

8. Many irrigators will respond on a voluntary compliance basis.

9. Those users who do not respond will feel a local social pressure as a result of being "out-of-tune" with the newly evolved customs of the community.
10. Regardless of approach, there will be some users who will not respond or will resist change, thereby requiring some authority for state agency enforcement.

RECOMMENDATION 2: IMPLEMENTATION

1. The Federal Water Pollution Control Act (P.L. 92-500) should be amended to exclude mandatory inclusion of irrigation return flows under the Section 402 NPDES program. The states can use their authority under Section 402 when an irrigation-related pollution source has been identified as being detrimental, and the user has failed to respond.

2. Disseminate the Influent Control Approach and evaluate its acceptance:

   a. through seminars conducted by EPA regional offices, and followed by;

   b. seminars and workshops in each state involving water users and state and federal water and related agencies.

3. Incorporate the feedback from the evaluation into preparation of final regulations.

RECOMMENDATION 3: RESEARCH

Determine the state-of-the-art on laws, regulations and programs on all administrative levels for control of agricultural practices related to sediment and erosion control and application of agricultural chemicals (fertilizers and pesticides) and the extent that such laws and programs are being carried out. Based upon these findings and analyses, formulate a model Agricultural Practices Act with alternative provisions according to regionalization of certain problems or practices.

SECTION 4: THE TECHNOLOGICAL - LEGAL INTERFACE

CONTENTS

THE TECHNOLOGICAL - LEGAL INTERFACE 22

DEVELOPMENT OF IRRIGATION SYSTEMS 22

NEED FOR WATER CONTROL 23

IRRIGATION RETURN FLOW QUALITY AS A NATIONAL ISSUE 27

- Recognition of Problem 27
- Federal Legislation 27
- Irrigation Return Flow Research 28

PHYSICAL CHARACTERISTICS OF IRRIGATION RETURN FLOW 29

- Physical Definition of an Irrigation System 29
- Pollution Characteristics 29
- Point and Non-Point Sources of Pollution 32
- Technological Solutions 32

EXTENT OF PROBLEM 33

CONSTRAINTS TO IMPLEMENTING TECHNOLOGY 35

EVOLUTION OF A PROBLEM 36

SECTION 4

THE TECHNOLOGICAL - LEGAL INTERFACE

DEVELOPMENT OF IRRIGATION SYSTEMS

The development of irrigation systems began thousands of years ago. Early civilizations were created and thrived near natural irrigable alluvial soils. Their success at developing an irrigation system that would produce agricultural products for their populations is well known. As early as 2627 B.C., the Chinese irrigated lands through a system of canals, the largest--the Imperial Canal--being 700 miles long and large enough also to be used for navigation. Large irrigation systems were developed by the Aryans in the naturally fertile arid valleys of the Tigris and Euphrates. Engineering skill was highly developed for the times as noted by the large irrigation reservoir, 42 miles across and 35 feet deep, which captured flood waters for use in the irrigation system, and by the high cement and brick embankments on both sides of the Euphrates, designed to protect ancient Babylon.

The history of Babylon also exemplified remarkable development in the legal area, particularly in water law. Local customs and practices in the art of irrigation were given specific provision in a written code, the Code of Hammurabi, promulgated about 2050 B.C. This code provided guidelines for water use and penalties for individuals violating rules within the water system.

Other civilizations have contributed greatly to the use of water and development of irrigation systems. The Egyptians, Carthaginians, Greeks, and Romans have added elements which, combined, provide a wealth of ingenuity and skill. Canals, aqueducts, reservoirs, and tunnels for domestic, irrigation, and sanitary uses were constructed, some of which are still in operation.

On the American continents, the earliest developments appeared in Peru, a semi-arid country where canals and aqueducts conveyed and spread water over lowland deserts; as well as lands along the Gila River in Arizona, which were irrigated centuries ago by Indians. Irrigation was practiced in Mexico in the early Christian Era, and spread northward to the areas now comprising California, New Mexico and Arizona, by the Spaniards and missionaries. Later, groups of Mormons entered the Salt Lake Valley in Utah and began diverting water through ditches to irrigate crops. Shortly thereafter, pioneers in Colorado and California developed irrigation systems that are still in existence (Baker, 1973).

The evolutionary process of an irrigation system is directly related to the social interaction, system of tenure and state of technology of the civilization with respect to the availability of water supplies. Thus, an irrigation system is both the institutional and physical facility by which the acquisition, distribution, use, and reclamation of waters contribute to the increased agricultural production in a particular area. Irrigation occurs under three main conditions: 1) when the water supply is inadequate; 2) when the water supply is unreliable; and 3) when the water supply may be used as a supplemental means of control and regulation.

Early irrigation systems in the arid western states grew from need, custom and ingenuity of the settlers. Once built, the physical characteristics of the early systems were modified only to expand water supplies for system enlargement or provide low cost improvements. A concept of property rights to water was developed that further solidified the permanency of the system; and, concurrently, individual pride in, attachment for, and fear of loss of his segment of the system emerged.

Irrigated agriculture has an important role in the development of the West. Without the application of water, these arid lands were usually worthless. Hence, development depended upon the availability of a water supply. Where an adequate supply and climatic conditions conducive to irrigated crop growth existed, settlement grew. The Federal Government,having adopted a policy of encouraging western growth in the late 19th century, contributed greatly to the rapid increase of the agricultural sector.

During the pioneer development period, settlements were formed on the streams where water supplies were available. Even the smallest creeks have a small community at their mouths and much of the water for irrigation in the West comes from small mountain streams.

The early pioneers in the West engaged in the construction of diversion structures and canals in order to irrigate reclaimed lands. Initially, the lands placed under irrigation were located adjacent to the river, thereby minimizing the effort required to deliver water to the fields. Later settlers would then undertake the construction of diversion works and a water delivery system to serve newly cultivated lands immediately above the original canal (Figure 3). Usually, this accomplishment resulted from a cooperative effort among the farmers to be served by the new canal. This process was continued until either land or water resources became limiting. As a result, an irrigated valley would consist of a series of fairly parallel canals traversing the valley. Many of these early canals are still in existence today.

NEED FOR WATER CONTROL

Coinciding with the physical development of water resources was the legal development of the right to use water. Initially, water was regarded as a community property available for use by all. But as development in the semi-arid West took place, investments made upon a dependable water supply, as well as recognizing the value of water, resulted in the early miners and settlers respecting a property interest to the water user. At this point, the benefits of a predictable water supply exceeded the costs of internalizing externalities prevalent in the community property status of this resource. The pioneer

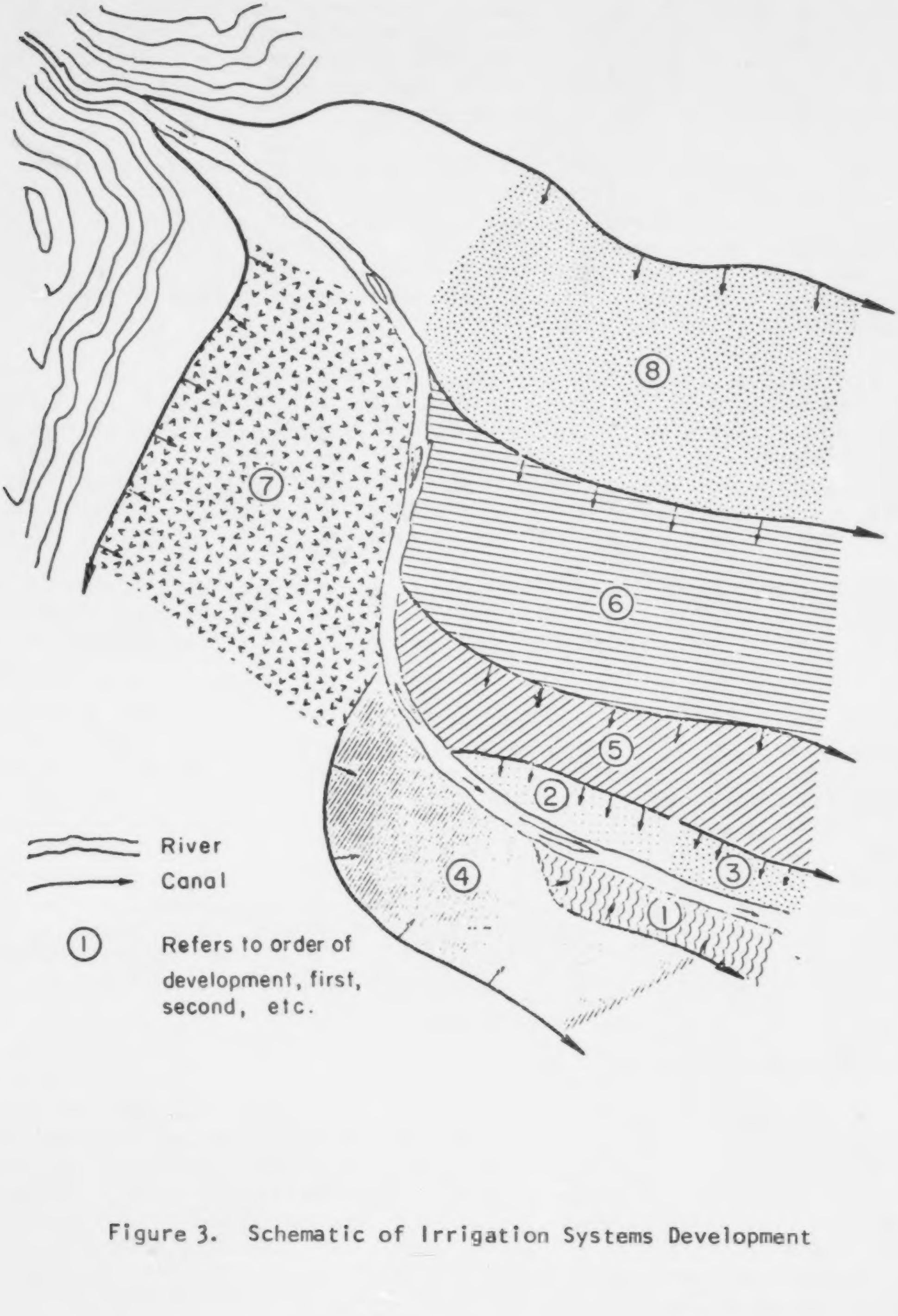


Figure 3. Schematic of Irrigation Systems Development

was willing to recognize an interest in others in order to gain the same treatment for his use of the water. Through custom, miners had previously developed a moral code prohibiting claim jumping, and this same respect was accorded the use of water. As a consequence, a firm "property right" developed, subject to certain restraints (i.e., beneficial use and nonwaste), but accorded the same protection under the law as real property. Legally described as a usufructuary right, the possessor could use the water once it was captured and it then became his personal property, but this right did not attach to any specific waters because of the resource's fugitive nature.

Since the inception of the property right concept in water, there have emerged several basic doctrines, multitude of institutional arrangements and volumes of cases and agency rules to protect and insure its existence. The humid East adopted the English "riparian water law," giving owners of land adjacent to a water body a proportionate right to use the water. This "water right" was undependable and indefinite, and existed by virtue of land location.

In the 17 western states, the doctrine of prior appropriation was adopted. The gold rush days of 1849 in California provided its foundation. In 1855, the customary law was accepted by the courts in Irwin v. Phillips (5 Cal. 140). The court recognized a right of use for the person who was first to appropriate and divert water from the stream for mining purposes regardless of land proximity to the water source. A case in Montana in the mid-1800's decided that shooting a man for taking another's water was not a legitimate way to settle a dispute. Shortly thereafter, Colorado was the first to include the doctrine in its constitution in 1876. Since that date, it has been adopted by constitution or statute in the other 17 western states.

The details of the various water law systems in the West are covered in Section 5, Vol. I. However, a short summary here placed the role and development of these laws in perspective with physical developments. Basically, this doctrine is stated as "first in time is first in right." The early pioneers who first developed the water obtained the first rights to use the stream, while later settlers acquired junior rights. Many of the original water rights are for direct flow only, while some of the later rights combined storage rights with flood flow diversion.

There are certain basic principles which exist in all the appropriation states, even though statutes and cases have modified the doctrine. The first is that beneficial use must be made of the water. Many different uses have been recognized, some given statutory preference such as domestic and municipal uses, and recent trends witness acceptance of such uses as aesthetics and recreation. In the past, emphasis has been placed on "type" rather than "method" to determine beneficial use, with most states also applying a nonwaste concept.

The second principle is that priority of use shall determine water allocation among users when a water deficit occurs, thus closing diversions in an inverse order of priority regardless of type of use. Those uses given legal preference have the right to condemn and compensate non-preferred users for a water supply.

The third principle is that a water right is for a definite quantity and does not depend upon land location adjacent to a body of water, nor is the right holder required to share the amount flowing in the stream upon a proration basis. The last major principle is that so long as beneficial use of the water is made, a property right in perpetuity exists. Over the past decade, several states have adopted a term-permit or periodic evaluation of the water right. Also, definition and application of beneficial use varies from state to state and among uses.

The tier states along the West Coast and from North Dakota to Texas applied both the riparian and appropriation doctrines to surface flows. Ground water laws, which were enacted much later--actually as late as the mid-1960's in some states--applied many of the same principles as did the state surface water laws. But here again, each state adopted and modified the law to fit its particular needs or legislative fancy so that, with four instead of two distinct systems as found in surface water law, there is an even greater lack of uniformity between states.

The prior appropriation doctrine provided the needed security of a water supply for mining, agricultural, municipal, and industrial interests. This doctrine also provided an administrative system with judicial review to allocate and distribute waters and resolve disputes between competing users. It also provided flexibility by allowing transfer to take place. As a consequence, the users molded institutional sophistication to meet their needs.

With the enactment of constitutional provisions and statutes for water control, states also had to insure the laws were administered, and that water development occurred in an orderly fashion with the necessary control assented and not assumed. In almost all the western states, a state water agency was created for centralized administration (Montana is a most notable exception; not until the early 1970's was an office created equivalent to the State Engineer in other states). State administration was carried out by an agency called the Office of State Engineer, State Water Commissioner, State Reclamation Engineer, or Chief Engineer. This office is commonly referred to in the West as the State Engineer. With time, and particularly during the past two decades, the emphasis and reorganization has been more toward a Department or Division of Water Resources, with broader powers in water planning and management.

In most of the states, administration is regionalized by creating water divisions along hydrologic basin or political boundaries, with further subdivision into districts where irrigation systems developed. To assist the State Engineer or Director of the water resources agency and his division, engineers or superintendents, local water masters, or commissioners are often employed and, in many cases, paid for out of the assessments levied upon water users in the area.

IRRIGATION RETURN FLOW QUALITY AS A NATIONAL ISSUE

Recognition of Problem

Irrigation return flow constitutes a large portion of the flow in many streams and rivers of the western United States. The water quality problems associated with irrigation return flow are of special concern because irrigated agriculture is the largest consumer of western water resources. Water quality degradation from irrigated agriculture will become increasingly significant in the future as greater and greater demands are placed upon existing water resources as a result of increasing irrigated acreage, urbanization and industrialization (including energy development) in the West.

One of the earliest studies regarding irrigation return flow quality was reported by Wilcox (1962), who investigated increasing salinity levels in the Rio Grande resulting from irrigation. Salt balance studies were conducted between Santa Fe, New Mexico and Fort Quitman, Texas (below El Paso) for a 20-year period beginning in the late 1930's. The total salt load was reported as doubled, with El Paso Valley receiving much of the detriments from this increased salt load.

An extensive irrigation return flow study was undertaken in the Yakima Valley in central Washington during the early 1960's by Sylvester and Seabloom (1963). The major water quality problems occurring in the Yakima River resulting from irrigation return flows are: a) nitrates and salinity in subsurface return flows; and b) sediments, nematodes, phosphorus, high bacterial (coliform) content, and increased temperature of surface return flows.

The major water quality problem resulting from irrigation return flows in the western United States is salinity, with the Colorado River Basin being one of the more serious problem areas. Extensive studies over a ten-year period (1961-1971) by the U.S. Environmental Protection Agency (and its predecessor agencies) determined the salt loads from irrigated agriculture, mineralized springs, municipalities and industries, and other natural sources. This comprehensive investigation (U.S. EPA, 1971) brought national attention to the salinity problems along the Colorado River, which has led to the development of an action Water Quality Improvement Program with the U.S. Bureau of Reclamation being the lead agency.

Federal Legislation

A comprehensive approach to pollution control was first adopted at the federal level in 1948 with the Water Pollution Control Act (P.L. 80-845). The law was amended in 1956 by the Federal Water Pollution Control Act (P.L. 84-660) which has been the basic water pollution legislation to date. This act has been amended seven times since (see Section 7, infra), including the dramatic changes that took place in the 1972 amendments to the act (P.L. 92-500). From 1948 to 1965, it was the federal policy that it was the states' right to lead in the national effort to prevent, control and abate water pollution with the federal role limited to providing technical and financial assistance (Senate Report, 92-414, 1971, p. 1).

In the last decade, a major shift in federal-state relations has taken place, which has demanded a change in the attitude that highly degraded return flows could not be corrected. First, Congressional dissatisfaction with the mandates of pre-1965 water pollution contol legislation, and the efforts of states to take the initiative to control pollution, led to a declaration in 1965 that the purpose of this act (Water Pollution Control Act as amended) is now "to enhance the quality and value of our water resources and to establish a national policy for the prevention, control and treatment of water pollution" (P.L. 89-234, Sec. 1(a)(1)). The Water Quality Act of 1965 further required that all states establish water quality standards for their interstate and coastal waters or else federal standards would apply. Crucial decisions were required regarding the uses of water resources, quality criteria to support these uses, and specific plans for achieving such levels of quality. The water quality standards were, in effect, the guides to an effective cleaner water program.

This change in position from the Federal Government playing only a supportive role to one of still maintaining that states have primary responsibility in water pollution control has given the objective national recognition and concern. However, if the states fail, it is the duty of the Federal Government to insure that a "cleaner water" objective is achieved. This means for putting that objective into operation did not really come, however, until the 1972 amendments to the Federal Water Pollution Control Act (P.L. 92-500). As described more definitively in Section 7 of this report, these amendments introduced a "check and balance" approach to attacking the pollution problems. The main features include: control through effluent limitations backed up with existing water quality standards; enforcement through an effluent discharge permit system; continuous and areawide pollution management planning for point and non-point source control; and target dates to achieve specified levels of abatement. Although the major efforts to date appear to be in the treatment and control of municipal and industrial wastes, agriculture is by no means exempted from the fight against water quality degradation.

Irrigation Return Flow Research

A research program has been underway for nearly ten years to identify the water quality problems resulting from irrigation return flows, to develop technological solutions for alleviating these problems, and to evaluate institutional constraints and facilitators in implementing control programs.

A state-of-the-art report, "Characteristics and Pollution Problems of Irrigation Return Flow," was completed in 1969 (Utah State University Foundation), which also cited literature on this topic through 1967. Literature beginning in 1968 is published annually by EPA in a series of "Irrigation Return Flow Quality Abstracts." In 1971, the "Research Needs for Irrigation Return Flow Quality Control" was published (Skogerboe and Law), with the "National Irrigation Return Flow Research and Development Program" (Law, 1971) also appearing during that same year. These latter documents essentially detailed the EPA research program that has been followed to date. The material reported herein represents one project under this program.

For the purposes of this report, the EPA research program in irrigation return flow is not only important in having identified problems, developed solutions and evaluated the processes for implementing control program; but, this program has also played an important role in developing an awareness of irrigation return flow problems and solutions among water users and state agencies in those areas where research and demonstration projects have been conducted.

PHYSICAL CHARACTERISTICS OF IRRIGATION RETURN FLOW

Physical Definition of an Irrigation System

The irrigation system can be subdivided into three major subsystems (Figure 4): a) the water delivery system; b) the farms; and c) the water removal system. The water delivery system can be further subdivided into two components, namely: a) the transport of water and pollutants from the headwaters of the watershed to the cross-section along the river where water is diverted to irrigate croplands; and b) the transport of water and pollutants from the river diversion works to the individual farm. The farm subsystem is defined vertically as beginning at the ground surface and terminating at the bottom of the root zone. The water removal subsystem consists of: a) the surface runoff from the tail end of the farm (tailwater runoff); and b) the water moving below the root zone (deep percolation).

In most instances, the quality problems in the water removal subsystem are minimized by having highly efficient water delivery and farm subsystems. Minimizing the quantity of surface runoff will assist in alleviating quality problems due to sediments, phosphates and pesticides; whereas minimizing deep percolation losses from irrigated lands will reduce quality problems due to salts, including nitrates, in areas where salt pickup occurs.

Pollution Characteristics

Usually, the quality of water coming from the mountainous watershed in the West is excellent. At the base of the mountain ranges, large quantities of water are diverted to valley croplands. Much of the diverted water is lost to the atmosphere by evapotranspiration (perhaps one-half to two-thirds of the diverted water), with the remaining water supply being irrigation return flow. This return flow will either be surface runoff, shallow horizontal subsurface flow, or will move vertically through the soil profile until it reaches a perched water table or the ground water reservoir, where it will remain to be pumped or be transported through the ground water reservoir until it reaches a river channel.

That portion of the water supply which has been diverted for irrigation but lost by evapotranspiration (consumed) is essentially salt-free. Therefore, the irrigation return flow will contain most of the salts originally in the water supply. The surface irrigation return flow will usually contain only slightly higher salt concentrations than the original water supply, but in some cases the salinity may be increased significantly. Thus, the water percolating through the soil profile contains the majority of salt left behind

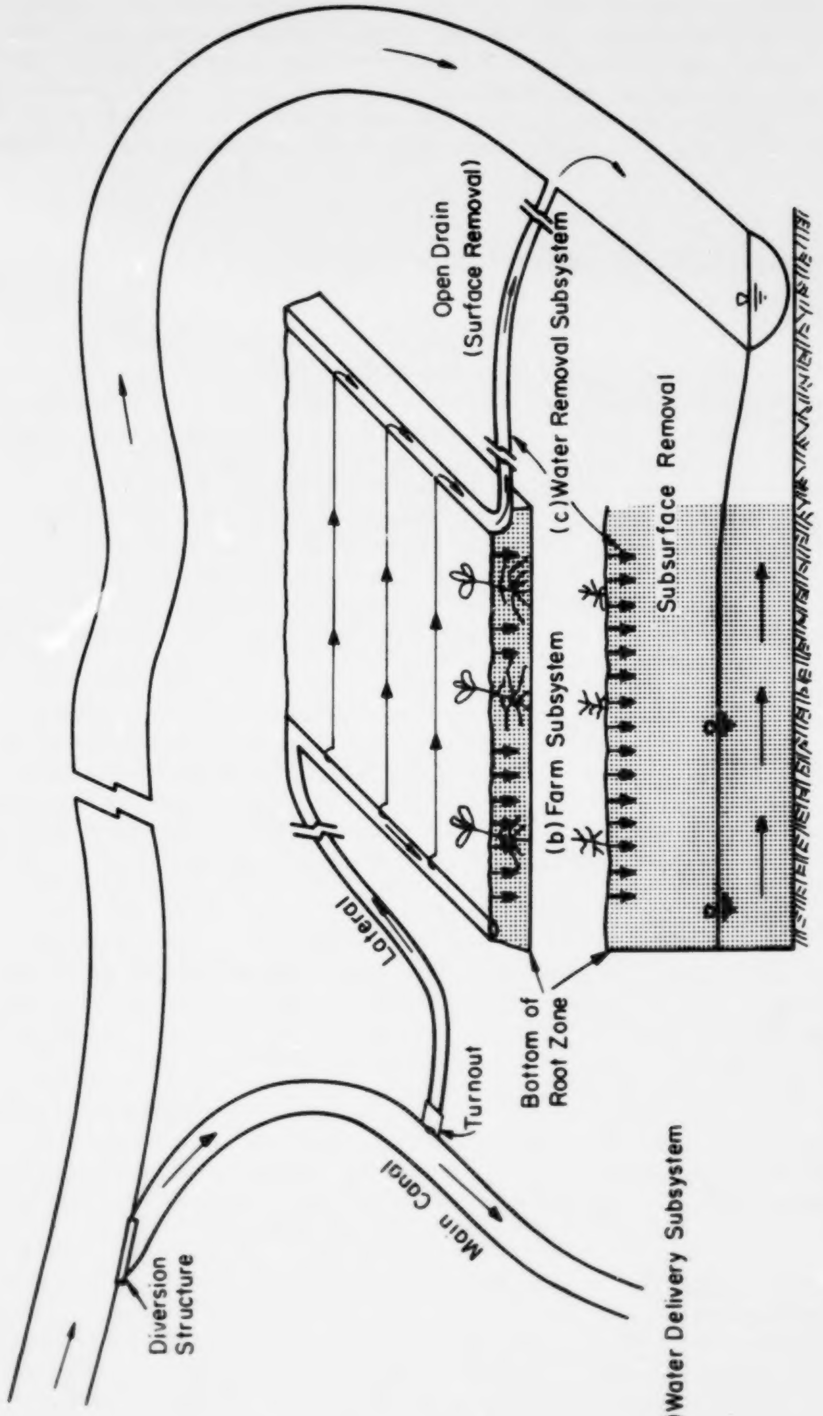


Figure 4. The Water Delivery, Farm and Water Removal Subsystems

by the water returned to the atmosphere as vapor through the phenomena of evaporation and transpiration. Consequently, the percolating soil water contains a higher concentration of salts. This is referred to as the "concentrating" effect.

As the water moves through the soil profile, it may pick up additional salts by dissolution. In addition, some salts may be precipitated in the soil, while there will be an exchange between some salt ions in the water and in the soil. The additional salts picked up by the moisture movement through the soil are termed salt "pickup." The total salt load is the sum of the original mass of salt in the applied water as the result of the concentrating effect plus the salt pickup.

Whether irrigation return flows come from surface runoff or have returned to the system via the soil profile, the water can be expected to undergo a variety of quality changes due to varying exposure conditions. Drainage from surface sources consists mainly (there will be some precipitation runoff) of surface runoff from irrigated land. Because of its limited contact and exposure to the soil surface, the following changes in quality might be expected between application and runoff: a) dissolved solids concentration only slightly increased; b) addition of variable and fluctuating amounts of pesticides; c) addition of variable amounts of fertilizer elements; d) an increase in sediments and other colloidal material; e) crop residues and other debris floated from the soil surface; and f) increased bacterial content.

Drainage water that has moved through the soil profile will experience different changes in quality from surface runoff. Because of its more intimate contact with the soil and the dynamic soil-plant-water regime, the following changes in quality are predictable: a) considerable increase in dissolved solids (salt) concentration; b) the distribution of various cations and anions may be quite different; c) variation in the total salt load depending on whether there has been deposition or leaching; d) little or no sediment or colloidal material; e) generally, increased nitrate content unless the applied water is unusually high in nitrates; f) little or no phosphorus content; g) general reduction of oxidizable organic substances; and h) reduction of pathogenic organisms and coliform bacteria. Thus, either type of return flow will affect the receiving water in proportion to respective discharges and the relative quality of the receiving water.

The quality of irrigation water and return flow is determined largely by the amount and nature of the dissolved and suspended materials they contain. In natural waters, the materials are largely dissolved inorganic salts leached from rocks and minerals of the soils contacted by the water. Irrigation, municipal and industrial use and reuse of water concentrates these salts and adds additional kinds and amounts of pollutants. Many insecticides, fungicides, bactericides, herbicides, nematocides (biocides), as well as plant hormones, detergents, salts of heavy metals, and many organic compounds, render water less fit for irrigation and other beneficial uses.

Point and Non-Point Sources of Pollution

In the water delivery subsystem, there are two sources of return flow, namely, bypass water and seepage. Canal or lateral bypass water would usually be discharged into a waste channel or drain and would be considered a point source of pollution. Seepage losses from water delivery channels would percolate through the soil and be considered a non-point source; however, some of this percolated water could reach open or tile drains, in which case this portion would be considered a point source.

In the on-farm water use subsystem, there are also two sources of return flow, namely, deep percolation losses and tailwater runoff. Deep percolation losses would be considered a non-point source, unless some of this water reaches open or tile drains, in which case that portion of the deep percolation losses would become a point source. Tailwater runoff from the croplands is considered a point source, unless a downstream water user diverts this water into his portion of the water delivery subsystem for irrigating his croplands.

The water removal subsystem consists of: a) surface return flows (which are point sources) from open drains and tile drains; or b) subsurface flows consisting of seepage losses and deep percolation losses that reach the ground water reservoir, where the water can be returned to irrigate cropland by pumping, or can return to the water as a non-point source to the river.

Technological Solutions

Point sources (surface return flows such as by-pass water) from the water delivery subsystem would generally not be expected to result in significant pollution problems. Possibly, problems of sediment erosion in the waste channel could occur, but a more likely problem would be the concentrating effect upon pollutants already in solution in the bypass water as a result of evapotranspiration by phreatophytes. Therefore, potential solutions would be stabilizing the channel banks to prevent erosion, phreatophyte eradication, or lining the waste channel. However, the most effective solution would be to minimize the quantities of bypass water by more effective methods of operating the water delivery subsystem, and then having small storage ponds located throughout the irrigation system to receive bypass water (e.g., during rainstorms when irrigation water is not wanted by the farmers).

Subsurface return flows (channel seepage) from the water delivery subsystems, which would be considered a non-point source, can be highly significant in irrigated areas which contribute to increased downstream salt loads. The most effective technologies are converting from open channels to pipelines, or lining the water delivery channels (e.g., concrete lining, gunnite, asphalt, plastic membranes, soil-cement, chemical sealants, etc.).

Surface return flows from the on-farm water use subsystem (tailwater runoff) can be most effectively controlled technologically by using better irrigation methods such as sprinkler irrigation or trickle irrigation, which will completely eliminate tailwater runoff if properly designed and operated; or by "tuning up" present surface irrigation methods to reduce the quantities of tailwater runoff. Another possibility is the use of tailwater recovery and reuse systems which consist of a small storage pond at the end of the field and a pumping system to convey this water back to the farm head ditch so that it can be reused in irrigating the field. Tailwater recovery and reuse systems have already become popular in those irrigated areas using ground water for the irrigation supply, because the energy costs for pumping ground water have risen dramatically in recent years. For surface irrigation methods (except basin irrigation, where precision land leveling is probably the best technological approach, along with improved water management practices), an optimal solution will result in "tuning up" the present surface irrigation methods in order to reduce the quantities of tailwater runoff, which in turn will reduce the cost of the tailwater recovery and reuse system.

Deep percolation losses (non-point source) from the on-farm water use subsystem constitutes the greatest cause of downstream pollution in many irrigated systems. To sustain irrigated agriculture, some deep percolation is required in order to satisfy the leaching requirements for maintaining a salt balance in the root zone; otherwise, crop yields will decline and eventually the land may become barren. The most effective technological controls are improved on-farm management practices, such as "tuning up" the present irrigation methods, using advanced irrigation methods (sprinkler irrigation or trickle irrigation), and irrigation scheduling (including the use of flow measuring devices). Proper use of fertilizers and improved farm cultural practices are also important.

Surface return flows in the water removal subsystem, which are point sources, consist primarily of flows in open drains or tile drainage discharging into open drains. The most effective controls are improved on-farm water management practices. However, these return flows can be collected and then treated or evaporated, but the costs of appropriate treatment methods are usually very high and evaporation ponds may also be either extremely expensive or undesirable because the water is consumed.

Subsurface flows in the water removal subsystem are encountered in the underlying ground water reservoir. Again, the most effective controls are to minimize these subsurface return flows by improved on-farm water management practices. Pumping from the ground water reservoir may be desirable if the ground water quality is good enough to allow beneficial use of the pumped water. If the ground water quality is poor, then pump drainage in conjunction with treatment can be employed, but the costs will generally be very high.

EXTENT OF PROBLEM

Two examples of major river basins having high utilization of the water resources and experiencing deleterious water quality effects are the Colorado River Basin and the Rio Grande Basin. The water users in the Lower Colorado River Basin, especially Mexico, the Imperial and Coachella Valleys, experience difficulties at the present time due to high salt concentrations in the river. Salt concentrations in the Lower Colorado River at the turn of the century (year 2000) due to anticipated water resource development projects are expected to increase significantly. Projects are presently nearing completion for exporting additional quantities of high quality water from Colorado River watersheds to satisfy water demands in the more populous regions of Utah, Colorado and New Mexico. The authorized Central Arizona Project will divert large quantities of flow from the Colorado River to Salt River Valley, which is within the basin, but the return flows to the Colorado River will be almost nil. However, the irrigation return flows will have long-term effects on the salt balance in the Salt River Valley. In addition, large quantities of water will be diverted, with no return flows, for use by present and future power plants in the four corners region (Utah, Colorado, New Mexico, and Arizona). A salinity control program, which would be a combination of controlling mineralized springs and irrigation return flows, would negate a large portion of the damage which will result from recently constructed and anticipated water resource development projects that will export good quality water to adjacent river basins, thereby leaving less water within the Colorado River Basin for diluting irrigation return flows.

The Rio Grande Basin is another example of an area already experiencing serious water quality problems, with the outlook for even more serious problems. Rapid population growths in Albuquerque, El Paso and Juarez alone foretell of immediate difficulties. Whereas studies have been made in the Colorado River Basin which predict future water quality problems due to basin development, such comprehensive studies have not been undertaken in the Rio Grande Basin. Future water quality problems in this basin could easily result in international problems somewhat similar to those recently experienced in the Lower Colorado River. However, there is sufficient information in the Rio Grande Basin to show that the water quality problems are primarily related to the consumptive use of water by man's activities (with much of the consumptive use resulting from irrigated agriculture), which results in a "concentrating" effect of the salts present in the system.

There are numerous examples of irrigation return flow quality problems throughout the Upper Missouri River Basin. Most of the quality problems that can be cited are the result of increased salinity, but this is largely due to a combination of two factors. First of all, the water supplies are fairly plentiful, which tends to mask quality degradation. Secondly, there is a real lack of documented studies regarding irrigation return flow quality in this region of the United States. The present knowledge on quality problems is the result of irrigation system failures or recent investigations undertaken for the purpose of expanding irrigated agriculture (e.g., the Oahe Project in South Dakota or the Garrison Diversion Unit in North Dakota).

Areas in North Dakota and South Dakota, which are experiencing irrigation development, will face many salinity problems. Many of these lands are underlain by soils high in natural salts. Because of soils having low permeability, drainage will be required for many of these irrigation projects to insure their success. At the same time, irrigation return flow quality problems will increase substantially.

The Garrison Diversion Unit in North Dakota may be cited as an example which also has an international dimension because the irrigation return flows will enter Canada. The plan for development involves the diversion of Missouri River water from Garrison Reservoir into the Red River of the North Basin to irrigate ultimately a total of one million acres. Recent developments in prediction techniques have allowed some valid estimates of the impact of the irrigation return flows on the quality of Red River water. At the insistence of irrigators and water district personnel, the original plans were revised to include lined canals and pipeline distribution systems. Advantages of the revised plan include: adaptability to sprinkler methods and reduced land preparation costs; increased water control and water use efficiencies; reduced weed control requirements; limited subsurface drainage needs; and lower operation and maintenance costs.

The problem areas cited above represent the most significant water quality problems resulting from irrigation return flows in the West. At the same time, however, it must be recognized that there is a paucity of data regarding irrigation return flow quality (see Water Quality, p. II-173 and p. II-182, 1976). Consequently, as time goes by and more data is collected, other problem areas will be identified. The problem areas that have been identified to date primarily are the result of significant water quality degradation downstream from an irrigated area that has impaired other beneficial uses of the water. Since every irrigated area has a water quality impact on underlying ground water reservoirs or downstream surface waters, the quality of irrigation return flows from an area becomes a problem when such return flows impair other beneficial uses of either the ground water or surface water supplies.

CONSTRAINTS TO IMPLEMENTING TECHNOLOGY

Although the water pollution resulting from any particular irrigated area may be dominated by either surface return flows (point sources) or subsurface return flows (non-point sources), most irrigated areas will experience both. In fact, for the irrigation return flow quality problems identified to date, subsurface return flows are creating much more water pollution problems than surface return flows. Consequently, irrigation return flow quality is mostly a problem of non-point source pollution.

One of the greatest problems in alleviating water quality degradation from irrigated agriculture is that each area is "site specific." In other words, the technological solutions that are most appropriate for one irrigated area will not likely be the most appropriate combination of technologies for another irrigated area. Thus, considerable effort is required in collecting sufficient field data for determining the sources of pollutants in a particular area, as well as evaluating technological solutions for reducing the pollutant loads.

In most cases, the key to minimizing irrigation return flow quality problems is to improve water management practices on the croplands. However, a strong technical assistance capability is required in interacting with farmers in order to implement effectively many of these practices. This technical assistance is not only required to arrive at appropriate technologies peculiar to each farmer's needs, but it must be recognized that capital improvements only represent an increased potential for improved water management, and that the operation and maintenance of these improvements really dictate the degree of improved water management actually achieved.

After identifying that there is an irrigation return flow quality problem, after determining the sources of the pollutant loads and developing appropriate technologies acceptable to the farmers, there is still one significant constraint that will likely impede implementation--water rights! Water has been allocated to irrigated agriculture in the majority of the 17 western states under the doctrine of prior appropriation since as early as the mid-1800's. Under the practice of granting a water user first in time to divert and apply to beneficial use a property right to continue to use the water that is senior to all later appropriations, a system of water rights evolved which has become institutionalized and resistant to change. Water has continued to be diverted for agriculture since the inception of the right and often by the same conveyance and application practices employed at the time the right was created. Fear of loss of the right through nonuse compels water users to divert their full entitlement, so that change in irrigation water management practices will only likely occur if strong incentives are provided. And by no means does water quality enhancement for some downstream user have the necessary appeal to cause an automatic change in this institution. The objective of the water right is satisfied once the water is applied and hence any water quality degradation sustained downstream from surface (tailwater) runoff or subsurface (seepage and deep percolation) return flows is of no direct concern to the appropriator.

EVOLUTION OF A PROBLEM

This is the situation. We have an established legal and institutional system existing with many water users satisfied and unwilling to change. Water is a scarce resource and water requirements have multiplied rapidly in recent years, while the political and social structures of our society have changed significantly. The laws and institutions have not remained static; they have changed and remain flexible to a certain degree. But the solutions to the water supply needs of the past century have created a new dimension in water resources planning, development and quantity management--the need to incorporate water quality control into the process.

For agriculture this dimension has to be promoted and accepted into an institutionalized system of water rights and water organizations in which the federal and state governments and agencies have promoted and even subsidized the activity of irrigation. To suddenly embrace a component that could potentially cause an economic hardship cannot be expected from this group of Americans that have spent their lives planning, developing, delivering, and using water for irrigation.

To make the evaluation of this problem a less difficult one to cope with, we should briefly examine the way in which the new dimension has been injected. Initially in our history, the water quality problem was viewed as one to be corrected for the adverse health effects it caused. But in the mid-1950's water quality control legislation began to emerge. Agriculture was not seriously affected except where sediment and agricultural chemicals produced a pronounced problem. The emphasis was on municipal and industrial discharges and the health and sanitation problems that followed. The people primarily working in this field were, appropriately, sanitary engineers.

Then adverse effects upon the beneficial use of water generally began to emerge, and states enacted pollution control laws in the late 1960's, with the encouragement of the Federal Government, to protect these beneficial uses recognized under state law as the basis for allocating water. The same people who implemented the discharge control approach for M&I return flows tried to apply this same approach to solve the irrigation return flow problem. Unfortunately, most were not fully aware of the institutional arrangements in irrigated agriculture, the temperament of the water users, nor the true nature of the problem.

In summary, we have observed several problems emerge and solutions carried out to mitigate or resolve them. The remainder of the report goes into the water quality control efforts by the federal and state governments. And, while reading these sections, keep in mind that the solution to incorporating the water quality dimension into the complex livelihood in the West may well be in understanding the people and the problem before positive steps toward control can be taken.

SECTION 5: STATE WATER QUALITY LAW

CONTENTS

STATE WATER QUALITY LAW. 39

BACKGROUND 39

WATER QUALITY LAW. 41

  Water Quality Control Policy. 41
  Criteria for Water Quality Control. 45
  Control Activities. 50
  Sanctions and Enforcement Measures. 52

SPECIAL LEGISLATION. 53

RELATED LEGISLATION. 55

REGULATIONS AFFECTING IRRIGATION RETURN FLOW QUALITY 57

SUMMARY. 60

SECTION 5

STATE WATER QUALITY LAW

BACKGROUND

Water pollution control has actually had a long history in the United States, dating back to the local laws for sewage control in the colonial times. In the late 19th century, laws were passed at the state level to protect navigation and protect the public health from contamination of domestic water supplies and spreading of diseases.[1] In the West, several states had enacted legislation to prohibit pollution of water used for domestic and farm purposes (Montana, 1895; Oregon, 1889). Then, by the early 20th century most of the western states passed laws to deal with specific water pollution problems (i.e., Colorado, 1908; Idaho, 1909; Kansas, 1907; Montana, 1901; Nevada, 1903; North Dakota, 1900; Texas, 1913).[2]

California adopted a constitutional amendment in 1928 that made all water rights subject to the limitation of reasonable beneficial use and providing that no right be extended to waste or the unreasonable use, method of use, or method of diversion. It is perhaps the first instance where quantity and quality were combined to provide state capability of administration. During this same period, other states enacted laws not only to provide public health and welfare protection, but to protect the beneficial uses of water to which people acquired property rights under the quantity allocation laws (e.g., Wyoming, 1921). Most of the administration of these early laws down through the 1940's was carried out by local health departments.

In the 1930's a new dimension to water pollution was being experienced by many mid-western and western states. A drought had set in and when rains did occur, there was a great deal of erosion, including top soil which clogged canals and made stream water costly to divert. Many states turned to conservation legislation (Kansas, 1939; Nevada, 1931). These laws provided for the formation of local districts to conserve soil resources, control and prevent soil erosion, and protect the quality of the water resources to meet the needs of the people.

---

[1] See Reitz, 1972, Chapter 4, for an account of the early pollution problems to health.

[2] See A Review of the Laws Forbidding the Pollution of Inland Waters in the United States, 1905 and Stream Pollution, 1918.

By 1948, when the first significant piece of federal legislation was enacted, most states throughout the country had adopted some form of pollution control legislation (Gindler, 1967, p. 28). State and local health departments were responsible for carrying out the law. There was little activity between the federal and state governments up to that point, for no federal program existed. The federal attitude was that pollution control was primarily a state responsibility. In fact, this view prevailed until 1965 when the Federal Government declared it would initiate control where states failed to adopt standards and enforcement procedures (Water Quality Control Act of 1965, P.L. 89-234).

During the late 1940's, 1950's and 1960's, new and amended legislation was enacted by each of the western states in response to federal legislation and programs. The federal laws and programs, outlined in Section 7 below, required the states to have basic provisions and consistent programs in order to qualify for federal grants and other assistance. The most notable changes in state laws occurred in the late 1960's with the promulgation of water quality standards and implementation plans as required by the Federal Water Quality Control Act of 1965. To many states, this also required amending their basic legislation, which in some cases was enacted as early as 1907 (Kansas). The majority of western states did, however, adopt basic laws in the 1950's and 1960's in response to federal action. The main reason for the change in federal attitude was the lack of successful pollution control at both the federal and state levels during the preceding 20 years.

An important administrative trend is evident at the state level during this period, however, that makes present-day control more likely. That trend was the shift from a multitude of agencies having pollution control functions to designating one agency with overall authority, and creation of boards or commissions to provide policy guidance. Gindler reports another noticeable trend which has significant connotations (1967, Ch. 14). Beginning in the early 1960's, water quality and pollution control were starting to be considered components of an overall problem with emphasis either upon: a) water and the related problems of quantity and quality; or b) upon the total environment with water as one component. The latter trend became exceedingly apparent during the late 1960's and early 1970's as a result of the National Environmental Policy Act of 1969 and the new environmental canon ethic that prevailed until the energy crisis focus in 1975.

At present, all of the western states have established water pollution control laws that are highly uniform in purpose, control and enforcement approaches, and administrative implementation. The legislative enactments and promulgations of rules that have taken place in the past four years have been primarily to qualify for new grants under P.L. 92-500 (Water Pollution Control Act Amendments of 1972), and to adopt a permit discharge system comparable to the federal NPDES permit program.

This degree of uniformity does not exist between states in their water quantity allocation and administration laws. But, then, again, there is nothing comparable at the federal level for quantity control as found in quality control. The most obvious current trend, aside from uniformity in the law, is agency reorganization or coordination of quantity and quality control.

California and Washington have integrated administrative systems and a number of other western states are considering similar action (i.e., Kansas, Texas).

The remainder of this section will discuss the basic water pollution law as currently found in the 17 western states, the special and related legislation and the law as it specifically affects irrigated agriculture. This section is a synthesis of materials on state water quality laws found in Appendix A. A brief report on each state under similar headings can be found in that appendix.

WATER QUALITY LAW

As stated previously, by 1973 all of the 17 western states had passed water quality control acts, or made water pollution control a part of the broader environmental protection legislation. In many instances, the amended acts were recodifications of past laws into a comprehensive package with additional administrative authority in order to comply with federal requirements.

The pattern of present state water quality control legislation is very similar to the components and declarations found in P.L. 92-500. As a general statement, basic state acts consist of five components:

1. Water quality policy.

2. Criteria for pollution control:

   a. classifications of waters;
   b. water quality standards;
   c. effluent discharge standards.

3. Control activities:

   a. permit system;
   b. construction grants and programs;
   c. public participation in planning and setting of standards.

4. Sanctions and enforcement measures.

5. Administrative structure.

Each of these components will be discussed in turn with important variations in state law noted. In addition, subsections address special and related laws and regulations. This discussion is based upon information contained primarily in the state reports found in Appendix A of this report. For specific provisions or conditions in particular states, the reader should consult the state report.

Water Quality Control Policy

The foundation for water quality control within each state is found in policy declarations introducing the legislation, or in pronouncements by the agency charged with administering the law. Fifteen of the states have policy statements which are very similar. The policy of California exemplifies the broadest declaration:

> The Legislature finds and declares that the people of the state have a primary interest in the conservation, control, and utilization of the water resources of the state, and that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state.
>
> The Legislature further finds and declares that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.
>
> The Legislature further finds and declares that the health, safety and welfare of the people of the state requires that there be a state-wide program for the control of the quality of all the waters of the state; that the state must be prepared to exercise its full power and jurisdiction to protect the quality of waters in the state from degradation originating inside or outside the boundaries of the state; that the waters of the state are increasingly influenced by interbasin water development projects and other state-wide considerations; that factors of precipitation, topography, population, recreation, agriculture, industry, and economic development vary from region to region within the state; and that the state-wide program for water quality control can be most effectively administered regionally, within a framework of state-wide coordination and policy (C.W.C. Sec. 13000).

The California State Water Resources Control Board is responsible for formulating California's policy for water quality control (C.W.C. Sec. 13140), which must be periodically reviewed (C.W.C., Sec. 13143). To insure compliance with state policy, all regional water quality control plans must be approved by the State Board (C.W.C., Sec. 13245).

In addition, California policy for water quality control shall consist of all or any of the following:

> (a) Water quality principles and guidelines for long-range resource planning, including ground water and surface water management programs and control and use of reclaimed water.
> (b) Water quality objectives at key locations for planning and operation of water resource development projects and for water quality control activities.
> (c) Water quality control plans adopted by the state board for interstate or coastal waters or other waters of interregional or state-wide interest.

> (d) Other principles and guidelines deemed essential by the State Board for Water Quality Control (C.W.C., Sec. 13142).

The State Board cannot adopt a state policy for water quality control unless a public hearing is held (C.W.C., Sec. 13147). Sixty days in advance of the hearing, the State Board must notify the appropriate regional board and give notice of the hearing by publication.

Typical of the water policies found in the other states is the statutory provision contained in Oregon's law:

> (1) To conserve the waters of the state;
> (2) To protect, maintain and improve the quality of the waters of the state for public water supplies, for the propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, municipal, recreational, and other legitimate beneficial uses;
> (3) To provide that no waste be discharged into any waters of this state without first receiving the necessary treatment or other corrective action to protect the legitimate beneficial uses of such waters;
> (4) To provide for the prevention, abatement and control of new or existing water pollution; and
> (5) To cooperate with other agencies of the state, agencies of other states and the Federal Government in carrying out these objectives (O.R.S., Sec. 468.710, emphasis added).

As a general proposition, the policy declaration also contains specific reference to the protection of beneficial uses of water as provided in the water allocation laws, non-degradation of waters that exceed current water quality standards and target dates identical or close to those found in federal legislation. The specific policy of Idaho's Board of Health and Welfare towards water quality is "to provide for an orderly and economically feasible comprehensive water pollution control program, which program shall be administered to conserve the waters of the State for all legitimate beneficial uses, including uses for domestic purposes, agriculture, industry, recreation and fish and wildlife propagation" (Water Quality Standards and Wastewater Treatment Requirements, Idaho Dept. of Health and Welfare, June 1973).

Other important provisions found in state laws and policy statements formulated by the agencies are the salinity policy of Arizona (Appendix A, Sec. 1.1.2); emphasis upon soil erosion control and programs of Kansas (Ibid., Sec. 5.1.2) and Arizona (Ibid., Sec. 1.1.2); and the recognition by Colorado that the problem of water pollution in Colorado is closely related to the problem of water pollution in adjoining states (Ibid., Sec. 3.1.1). California is concerned over ground water quality and has declared that:

> the State (has) a primary interest in the correction and prevention of irreparable damage to, or impaired use of, the ground water basins of this State caused by critical conditions of overdraft, depletion, sea water intrusion or degraded water quality (C.W.C., Sec. 12922).

California has also adopted a Water Reclamation Law, in which it is declared that:

> ...the people of the state have a primary interest in the development of facilities to reclaim water containing waste to supplement existing surface and underground water supplies and to assist in meeting the future water requirements of the state (C.W.C., Sec. 13510)....
>
> The Legislature finds and declares that a substantial portion of the future water requirements of this state may be economically met by beneficial use of reclaimed water.
>
> The Legislature further finds and declares that the utilization of reclaimed water by local communities for domestic, agricultural, industrial, recreational, and fish and wildlife purposes will contribute to the peace, health, safety, and welfare of the people of the state. Use of reclaimed water constitutes the development of 'new basic water supplies' as that term is used in Chapter 5 (commencing with Section 12880) of Part 6 of Division 6 (C.W.C., Sec. 13511).

California's Water Reclamation Law further states that:

> ...it is the intention of the Legislature that the state undertake all possible steps to encourage development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the state (C.W.C., Sec. 13512).

Several other states have policies providing guidelines for water quality control in environmental acts (i.e., California, New Mexico and Nebraska). Washington has also declared:

> ...that it is a fundamental and inalienable right of the people of the state of Washington to live in a healthful and pleasant environment and to benefit from the proper development and use of its natural resources. The Legislature further recognizes that as the population of our state grows, the need to provide for our increasing industrial, agricultural, residential, social, recreational, economic, and other needs will place an increasing responsibility on all segments of our society to plan, coordinate, restore and regulate the utilization of our natural resources in a manner that will protect and conserve our clean air, our pure and abundant waters, and the natural beauty of the state (R.C.W., Sec. 43.21A.010).

One of the most important declarations as far as irrigation return flow is concerned is found in Montana's recent act. The law states that it is the public policy of the state of Montana to:

> (a) conserve water by protecting, maintaining and improving the quality and potability of water for public water supplies, wildlife, fish and aquatic life, agriculture, industry, recreation and other beneficial uses;
> (b) provide a comprehensive program for the prevention, abatement and control of water pollution (R.C.M., Sec. 69-4801(1)).

The section further states that "it is not necessary that wastes be treated to a purer condition than the *natural* condition of the receiving stream as long as the minimum treatment requirements are met." "Natural" refers to conditions or material present from runoff or percolation over which man has no control "*or from developed land where all reasonable land, soil and water conservation practices have been applied* . Conditions resulting from the reasonable operation of dams at the effective date of this Act are natural" (*Ibid*., Sec. 2, emphasis added). As a general rule, however, agricultural return flows are included in the definition of "pollutant" in the state laws.

Criteria for Water Quality Control

There are three distinct criteria for control of water quality usually found in state laws. They are classification of waters, water quality standards and effluent discharge standards. A few states also have set pretreatment standards (i.e., South Dakota) and performance and toxic effluent standards (i.e., Nebraska and Wyoming).

In most every state, the water quality control agency is directed to classify the state waters and develop and maintain a comprehensive program for prevention, control and abatement of water pollution. Except for New Mexico and Oregon, all the states have developed a classification system based upon the beneficial uses of water. These systems range from 2 to 14 classifications, but in general include domestic water supply, full body contact recreation, partial body contact recreation, fish, wildlife and other aquatic life protection, agricultural and industrial, and aesthetic uses. Often, special provisions in the classifications are made for perennial and non-perennial streams (Appendix A, Sec. 7.1.3), streams designated for no future discharge, as return flow streams or streams requiring advanced waste discharge (*Ibid*., Sec. 11.1.3).

Texas has classified its surface waters into four categories: River Basin Waters, Coastal Basin Waters, Bay Waters, and Gulf Waters. Wyoming waters have been divided into the three classes:

> *Class I*: Those waters which, based on information supplied by the Wyoming Game and Fish Department, are determined to be presently supporting fish or have the hydrologic and natural water quality potential to support game fish.
> *Class II*: Those waters which, based on information supplied by the Wyoming Game and Fish Department, are determined to be presently supporting non-game fish or have the hydrologic and natural water quality potential to support non-game fish.
> *Class III*: Those waters which, based on information supplied by the Wyoming Game and Fish Department, are determined as

having the hydrologic or natural water quality to support fish (W.W.Q.R.R., Ch. I, Sec. 4, 1974).

Specific waters will be classified according to a priority system for classifying those waters which receive pollutants first (Ibid., Ch. I, Sec. 5, 1974). A stream must have been classified prior to issuance of a permit for discharge into it (Ibid.). Most states require that classification of streams be reviewed periodically, usually every three years.

In California, the regional water quality boards develop a classification scheme according to the particular regional needs. New Mexico has not developed a classification scheme but instead has chosen to regulate water quality according to specific geographical areas with water quality standards adopted for the various river basins. Oregon has not adopted a classification system for water quality control.

In conjunction with classification of state waters, all states have developed water quality standards according to bio-chemical composition that is to be protected or limits not to exceed. The typical approach is to develop general and specific standards with various parameters. Although the parameters vary in number from 6 to 15 and in quantitative terms, Oregon's general standards are indicative of those found in other states. The parameters defining pollution are:

(1) The dissolved oxygen content of surface waters to be less than six (6) milligrams per liter unless specified otherwise by special standards;
(2) The hydrogen-ion concentration (pH) of the waters to be outside the range of 6.5 to 8.5 unless specified otherwise by special standards;
(3) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide or any other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters;
(4) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation or industry;
(5) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish;
(6) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation or industry;
(7) Objectionable discoloration, turbidity, scum, oily slick or floating solids, or that coat the aquatic life with oil films;
(8) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or be

> otherwise injurious to public health;
> (9) Any measurable increase in temperature when the receiving water temperatures are 64°F or greater; or more than 0.5°F increase due to a single-source discharge when receiving water temperatures are 63.5°F or less; or more than 2°F increase due to all sources combined when receiving water temperatures are 62°F or less;
> (11) Radioisotope concentration to exceed Maximum Permissive Concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products or pose an external radiation hazard; or
> (12) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection to exceed one hundred and five percent (105%) of saturation, except when streamflow exceeds the 10-year, 7-day average flood (O.A.R. 340, Sec. 41-025, 1975, emphasis added).

Indicative of the parameters for specific standards are those found in Idaho:

> A. Coliform Concentration;
> B. Dissolved Oxygen;
> C. Hydrogen Ion Concentration;
> D. Temperature;
> E. Turbidity;
> F. Total Dissolved Solids
> (*Water Quality Standards and Wastewater Treatment Requirements*, Idaho Dept. of Health and Welfare, Sec. VIII, June 1973).

California does not use the term "standards" but rather water quality objectives. The Porter-Cologne Act directs each Regional Board to formulate and adopt water quality control plans for all areas within its region (C.W.C., Section 13240). These plans consist of "A" designation or establishment for the waters within a specified area of: 1) beneficial uses to be protected; 2) *water quality objectives*; and 3) a program of implementation needed for achieving water quality objectives (C.W.C., Sec. 13050; emphasis added).

Water quality objectives are defined as:

> ...*the limits or levels of water quality constituents* or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specified area (C.W.C., Sec. 13050 (h), emphasis added).

In establishing these objectives, the Boards must consider:

> (a) Past, present and probable future beneficial uses of water.
> (b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.

> (c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.
> (d) Economic considerations (C.W.C., Sec. 13241).

Several states have specific reference to irrigated agriculture in their water quality standards. Arizona requires their Water Quality Control Council to consider, among fourteen other items:

> 15. The degree to which any particular waste is amenable to treatment and the cost of such treatment, and shall take into consideration the benefit to the state or the advantage to its people by the prevention, abatement and control of water pollution as compared to the resultant financial burden on the water user or the unreasonable taking of his property.
> 16. In formulating any applicable standard pertaining to agricultural irrigation and drainage waters, the Council shall be guided by the principle that such waters are put to beneficial use within the state for the irrigation of lands or become return flows to the waters of the state and subsequently reused, and that such standards shall not diminish the water available for such uses nor deprive the state of such water (A.R.S., Sec. 36.1857 A).

The above statute further commands the Council to:

> 1. Not require any present or future appropriator or user of water to divert, cease diverting, exchange, cease exchanging, store, cease storing, or release any water for the purpose of controlling pollution in the waters of the state.
> 2. Exclude from water quality standards wholly private waters closed to all public uses and not discharging into or polluting any other waters of the state (A.R.S., Sec. 36.1857 B).

In Texas, standards for irrigation water were proposed in 1975 but have not been adopted by the Texas Water Quality Board. These proposed standards for irrigation waters are:

> The suitability of water for irrigation is influenced by:
> (1) the total salt concentration or salinity hazards;
> (2) the total amount of sodium and its relation to other cations (positively charged ion);
> (3) the concentration of boron and other constituents that may be toxic; and
> (4) the bicarbonate content in relation to calcium and magnesium (Texas Water Quality Standards, V. p. 4, 1975).

The suitability of water for irrigation is based on an irrigation water classification system prepared by the USDA salinity laboratory. These irrigation water classifications are based on the salinity classes which follow:

Class 1--Low-salinity water can be used for irrigation with most crops on most soils with little likelihood that soil salinity will develop.

Class 2--Medium-salinity water can be used if a moderate amount of leaching occurs. Plants with moderate salt tolerance can be grown in most cases without special practices for salinity control.

Class 3--High-salinity water cannot be used on soil with restricted drainage.

Class 4--Very high-salinity water is not suitable for irrigation under ordinary conditions but may be used occasionally under special circumstances. The soil must be adequate, irrigation water must be applied in excess to provide considerable leaching, and highly salt-tolerant crops must be selected.

South Dakota, on the other hand, has adopted specific water quality parameters for irrigation waters. The specific areas covered by these regulations are as follows:

> (1) Coliform organisms shall not exceed a MPN or MF of five thousand per one hundred milliliters, as a geometric mean based on not less than five samples obtained during separate 24-hour periods during any 30-day period, nor shall the number exceed ten thousand per one hundred milliliters in any one sample.
> (2) Fecal Coliform organisms shall not exceed one thousand per one hundred milliliters as a geometric mean based on not less than 5 samples obtained during separate 24-hour periods during any 30-day period; nor shall the number exceed two thousand per one hundred milliliters in any one sample.
> (3) Total dissolved solids shall not exceed 1500 milligrams per liter with a variation allowed under Section 34:04:02:32(3).
> (4) Conductivity shall not exceed 2500 micromohs/cm. at 25 degrees C with a variation allowed under Section 34:04:02:32(3).
> (5) The sodium absorption ratio shall not exceed 10 with a variation allowed under Section 34:04:02:32(3). (S.D. Board of Environmental Protection, Surface Water Quality Standards, Ch. 34:04:02:43, 1975).

The above criteria for irrigation waters is applicable only from May 15 to September 30. Also, the criteria for coliform and fecal organisms is applicable only to water used to irrigate root crops.

All western states have also developed waste discharge standards, but have very little reference to irrigation return flows. In Colorado, the Water Quality Control Commission has established standards for the discharge of wastes, but these standards do not include agricultural return flow discharges, except for the following statements on salinity:

> The Commission presently has not adopted a standard regarding salinity, but has reserved this section for such criteria. Since Colorado has been collecting and analyzing stream samples for a relatively short period of time, it is felt that

> insufficient data is available to set numerical standards at this time. In addition, technological know-how has not advanced to the point where all sources of salinity (irrigation return flows, for example) can be resolved. Therefore, Colorado proposes, where possible, to maintain salinity concentrations at or below present levels while gathering additional data so that meaningful numerical salinity standards can be established at some future date. In the meantime, Colorado will continue to take action against known discharges contributing to the salinity problem where present technology allows for such control; continue with demonstration projects, such as the Grand Valley Project; and, through whatever means available, strive to educate the irrigator in proper water management and irrigation practices.
>
> With regard to the Colorado River system and its tributaries, the State of Colorado will cooperate with other Colorado River Basin states and the Federal Government to support and implement the conclusions and recommendations adopted April 27, 1972, by the reconvened 7th Session of the Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and its tributaries.

In addition, as previously stated, some states have adopted performance, pretreatment and toxic pollutant standards (i.e., Nebraska, South Dakota, and Wyoming).

Control Activities

Basically, there are three control activities employed by the western states water quality agencies to carry out the policies and criteria discussed above. They are: 1) permit system for effluent discharges; 2) construction grants and programs; and 3) planning and development with public participation in setting various standards for water quality control. These tools are not to be confused with the legal tools for enforcing the law against violators, such as cease and desist orders and judgments.

The only activity to be discussed here is the permit system. The construction grants and programs do not directly apply to irrigated agriculture; at least there has been little if any use at the state level. The planning activities are in conjunction with the federally developed and promoted "208 planning" (Sec. 208, P.L. 92-500) and other planning activities required by federal law.

A permit is required from the state water quality agency to discharge lawfully or emit wastes into the surface waters of the state. Each state has particular requirements and conditions for obtaining a permit. The conditions normally consist of four, but may vary from state to state. They are:

1. Effluent limitations.

2. Schedule of compliance with interim dates.

3. Special conditions.

4. A monitoring program if appropriate.

The usual activities requiring a permit include:

1. Discharge of any wastes into the waters of the state from any industrial or commercial establishment or activity or any disposal system.

2. Construct, install, modify, or operate any disposal system or part thereof, or any extension or addition thereto.

3. Increase in volume or strength of any wastes in excess of the permissive discharges specified under an existing permit.

4. Construct, install, operate, or conduct any industrial, commercial, or other establishment or activity or any extension or modification thereof or addition thereto, the operation or conduct of which would cause an increase in the discharge of wastes into the waters of the state or which would otherwise alter the physical, chemical or biological properties of any waters of the state in any manner not already lawfully authorized.

5. Construct or use any new outlet for the discharge of any wastes into the waters of the state (O.R.S., Sec. 468.740).

Most permits are for a term of five years with renewal if the permittee is still in compliance with the conditions set out in the permit and if other conditions have remained unchanged. Permits can be modified or terminated if: a) the permittee violates the conditions of the permit; b) the permit was obtained by false or misrepresentation or failure to fully disclose all relevant facts; or c) physical conditions change in the receiving waters that require either a temporary or permanent reduction or elimination of the permitted discharge.

In 1974, Montana enacted the Montana Pollutant Discharge Elimination System (MPDES) in order to implement one common system for issuing permits for point sources discharging pollutants into state waters pursuant to Section 69-4801, et. seq. R.C.M. (1947) and Section 402(b) of the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500 and to meet the requirements of the National Pollutant Discharge Elimination System program (M.A.C., Sec. 16-2.14(10)-S14460, Jan. 18, 1974). Section 402(b) provides for the transfer of jurisdiction of the NPDES in Montana from the United States Environmental Protection Agency to the state of Montana. On June 10, 1974, the Environmental Protection Agency granted Montana the authority to issue NPDES permits (see Environmental Reporter, Current Developments, May 1, 1974 to April 30, 1975, p. 266). Permits issued under prior rules of Montana Administrative Code (M.A.C.) 16-2.14(10)-S14460 and M.A.C. 16-2.14(10)-S14530 will remain in effect until a permit is issued under this rule.

The owner or operator of any point source which discharges pollutants into state waters must comply with the following:

(i) Have filed a complete Refuse Act permit application with the U.S. Army Corps of Engineers which satisfies the filing requirements for NPDES: or
(ii) Have filed a complete NPDES permit application with EPA; or
(iii) File an appropriate MPDES permit application within 60 days following the effective date of this rule (March 8, 1974, 16-2.14(10)-S14460, 4(a)).

MPDES requirements are applicable to those discharges of irrigation return flow under NPDES requirements (16-2.14(10)-S14460, 4(d); see the Federal Register, July 5, 1973, Vol. 38, No. 128, Part III).

In California, the Regional Boards must issue waste discharge requirements (permits) as authorized by the Federal Water Pollution Control Act (C.W.C., Sec. 13377, see 33 U.S.C. 1151, et. seq.). These "permits" must ensure compliance with any applicable effluent limitation, water quality related effluent limitations, national standards of performance, and toxic and pretreatment effluent standards (C.W.C., Sec. 13377).

Any person who discharges, or proposes to discharge, waste into any region must file a report of that discharge to the appropriate Regional Board if that discharge could affect the quality of the water (C.W.C., Sec. 13260). The report must be accompanied by a filing fee not to exceed $1,000 (C.W.C., Sec. 13260 (d)) and be filed no less than 180 days in advance of the date on which it is desired to commense the discharge, or in sufficient time prior to commencement of the discharge to ensure compliance with Section 306 of P.L. 92-500 and any other applicable water quality standards, or effluent standard (23 Calif. Adm. Code of Sec. 2235.1, Environment Reporter, State Water Laws, Vol. 1, Sec. 721:0520 to :0526).

The permit programs of eleven western states have received EPA designation to administer the entire NPDES process, that is, to issue new permits, reissue expired permits, monitor permit compliances, and enforce violations (Water Quality, 1976, p. V-19). For a detailed discussion of an analysis of the permit process and program through mid-1975, see Permit Program, The, 1975. Section 7 below provides a summary of the federal program and western state activities. The states accepted by EPA to implement the NPDES program are listed in Table 2 in Section 7, along with the reasons why the remaining states have not received designations.

Sanctions and Enforcement Measures

The intent of federal and state water pollution control laws is to prevent and abate discharges which are harmful to the public health and welfare and the beneficial uses to which water is put. In so doing, the various laws have described or granted administrative authority to determine what activities must be stopped because of immediate harm, what discharge limits will be tolerated or excluded from control under certain conditions, such as discharges into non-perennial streams, and what discharges require a permit and compliance to an abatement and limitation schedule. Many of these points have been discussed above.

However, beyond a doubt, the sanctions which allow certain discharges under permitted or excluded conditions do not constitute the basis for a right to discharge. To dispel any notion that a discharge requirement is in the nature of a permit to discharge, the Porter-Cologne Act specifically provides that discharges do not receive the status of vested rights, but are in the nature of a privilege (C.W.C., Sec. 13267(c)).

One of the major problems and complaints of pre-1972 state and federal water pollution control legislation was the lack and inability of enforcement of the law by the regulatory agencies. The problem was two-fold. First, the legal mechanism was lacking or too weak. A polluter could "beat" the agency in court. Second, where the legal procedure was adequate, the penalties were often so small or minor that it "paid" to pollute rather than incur the cost of pollution control. Also, political and economic interests often got in the way of effective enforcement.

As a result of P.L. 92-500, the enforcement provisions are mandatory, not discretionary, and the legal tools are more precise. In all the state laws and regulations examined, the state water quality control agencies now have a host of approaches with varying degrees of impact. The range begins with notice to the polluter and an opportunity to voluntarily comply with the law. This may be done by submitting a detailed plan and time schedule to come into compliance. If the discharger fails to respond to this administrative notification or directive, the agencies have four other direct actions that can be taken:

1. Issuance of a regulating order, commonly referred to as a cease and desist order.

2. Initiation of court action to obtain a restraining order and/or injunction to prevent further discharges.

3. Levying of civil penalties.

4. Initiation of criminal proceedings by the county or district prosecutor or state attorney general.

Several states also permit the state agency to expend monies to clean up the waste (California) or restock fish killed (Nebraska) and charge the violator with reasonable costs.

SPECIAL LEGISLATION

In addition to basic laws and regulations for water quality control, state legislatures have also found it necessary to adopt special legislation to regulate particular activities affecting water quality. Because of the wide range in special legislation and lack of uniformity among the seventeen western states, the legislation is cited in Table 1 and the reader is directed to Section 3 of the respective state reports in the Appendix for a summary of the law.

TABLE 1. STATE SPECIAL LEGISLATION AFFECTING WATER QUALITY

State	Appendix A Section	Law
Arizona	1.3	Geothermal Resources Act
California	2.3	Clean Water Bond Law, Geothermal Resources Act, Water Reclamation Law
Colorado	3.3	Individual Sewage Disposal Act, Recreation Land Preservation Act
Idaho	4.3	Water Pollution Control Fund-Waste Disposal and Injection Well Act
Kansas	5.3	Solid Waste Act
Montana	6.3	Public Water Supply Act, Sanitation in Subdivisions Act
Nebraska	7.3	County Zoning Law, Water Pollution Control Tax Refund
Nevada	8.3	Solid Waste Disposal Act, County Sewage and Waste Water Law
New Mexico	9.3	Severance Tax Bonding Act Amendment of 1976
North Dakota	10.3	Drainage Permits
Oklahoma	none	
Oregon	12.3	Sewage Treatment and Disposal Act, Solid Waste Management
South Dakota	none	
Texas	14.3	Solid Waste Disposal Act, Injection Well Act
Utah	15.3	Municipal and County Pollution Financing Law
Washington	16.3	Protection from Water Pollution Act, Environmental Coordination Procedures Act
Wyoming	17.3	Health, Sanitary and Improvement, Water and Sewer and Drainage District Laws

RELATED LEGISLATION

There is a host of legislation for each state that has an impact or is related to irrigation return flow quality and potential quality control. The laws that are common to all the seventeen western states in some form are those authorizing the formation and operation of public districts. These are generally special purpose districts requiring approval of a certain percentage of the affected landowners and often court or state agency supervision. Their range includes irrigation, drainage, water improvement, water control, diking, sanitation, water supply, soil and water conservation, reclamation, flood control, planning, and water and sewer districts.

Several features of these special districts are important to their potential involvement or effects upon water quality. The districts, as public or quasi-public institutions, are generally held to be political subdivisions of the state. As such, they have powers to levy assessments or taxes, issue bonds, provide supervisory and regulatory functions, and act on behalf of those being served by the district. They can often construct and operate projects in furtherance of the special purpose. The extent of their liability varies and in most cases has not been precisely defined, particularly with respect to third party injury from failure to control the water use or related activities of a member of the district. However, there is little doubt that the water supply districts (including irrigation and conservation districts) can withhold delivery if a user is committing waste.

As a general summary of the purposes and powers of these special districts, the reader is referred to the discussion found in Appendix A, Oregon Report, Section 12.4. The Natural Resources Conservation District Act of Arizona illustrates the breadth of powers of special districts, as they may apply to return flows from irrigated lands. This Act gives such a district the power to:

> Conduct surveys, investigations and research relating to the character of the soil, erosion prevention within a farm or ranch, methods of cultivation, farm and range practices, seeding, eradication of noxious growths and such other measures as will aid farm and range operations, disseminate information pertaining thereto, and carry on research programs with or without the cooperation of the state, the United States or agencies thereof (A.R.S., Sec. 45.2054(1)).
>
> Cooperate and enter into agreements with landowner, operator or any agency or subdivision of the state or federal government to carry on programs of soil erosion prevention, methods of cultivation, cropping practices, land leveling and improvement on agricultural lands, and programs limited to methods of proper range use, reseeding and the eradication of noxious growth on grazing lands, all within the limits of an individual farm or range and subject to such conditions as the supervisors deem necessary (A.R.S., Sec. 45.2054(3)).

This Act created the Division of Natural Resource Conservation as a division of the State Land Department (A.R.S., Sec. 45.2011). In defining the boundaries of such a district, the Commissioner of the Division of Natural Resources Conservation must consider:

1. The topography of the area.

2. The character of soils.

3. The distribution of erosion.

4. Prevailing land use practices.

5. The desirability and necessity of including within the boundaries of the district the particular lands under consideration and the benefits to be received by such inclusion.

6. The relation of the proposed area to existing watersheds and agricultural regions, and to other districts already organized or proposed for organization.

7. Such other physical, geographical and economic factors as are relevant (A.R.S., Sec. 45.2033).

Several states have passed land use laws that require the inventorying of current land use and compliance with regulations on future changes in use patterns (i.e., Colorado, Montana, Nevada, and Washington). The Montana Economic Land Development Act (R.C.M., Sec. 84-7501 to 7526, 1975 Supp.) was enacted to enable local control and decisions to be foremost in determining the growth patterns of the state (R.C.M., Sec. 84-7502). The Act was designed to protect prime agricultural land and guide industrial and commercial development among other things (R.C.M., Sec. 84-7503).

A complete inventory of the land and its usage must be included in the governing bodies' plan and include:

> (i) land types, based on federal standards;
> (ii) the flood plain of all streams and rivers;
> (iii) current vegetation patterns, i.e., cropland, irrigated land, rangeland, non-productive land;
> (iv) development land; and
> (v) all federal, state, or Indian lands.
> Decisions shall be coordinated with the Department of Revenue (R.C.M., Sec. 84-7505).

While this Act (and those of other states) may not directly deal with water pollution, it is closely related to the State's policy of conserving its resources and preserving its agricultural lands. California adopted the Waste Reuse Law in 1974 (C.W.C., Sec. 460, et. seq.). This act allows the Department of Water Resources to conduct studies and investigations on the availability and quality of waste water and the uses of reclaimed waste water for beneficial purposes, including ground water recharge, municipal and industrial use, irrigation use, and cooling for thermal electric power plants (C.W.C., Sec. 462). Section 461 of this act states:

> ...that the primary interest of the people of the state in conservation of all available water resources requires the maximum reuse of waste water in the satisfaction of requirements for beneficial uses of water.

Numerous other laws have been adopted by the states, such as the Industrial Development Information and Filing Act in Wyoming, which impact water quality. It is suggested that Section 4 in the state reports of Appendix A be consulted for information on a particular state's laws or activities of a related nature to water quality problems from irrigation return flow.

REGULATIONS AFFECTING IRRIGATION RETURN FLOW QUALITY

There has been very little legislative or agency rule-making activity by the seventeen western states in the specific area of irrigation return flow quality control up to this time. Only three states have adopted regulations impacting the quality of these return flows. They are California, Idaho and Nebraska, with Idaho's Department of Health and Welfare adopting regulations requiring a permit to discharge from large irrigation projects (Environment Reporter, Vol. 7, No. 42, p. 1610, Feb. 18, 1977); however, the Idaho permit regulations were rescinded by the 1977 state legislature.

North Dakota has adopted regulations pertaining specifically to salinity but not to irrigation return flows generally. The regulations have focused on the issue of salinity in the following manner:

> High salinity (total dissolved solids) is recognized as a significant water quality problem which often causes adverse physical and economic impacts on water users. High salinity is recognized as a problem in many streams and rivers in the State. The Department will continue to cooperate with other State and Federal agencies in determining problem areas and salinity reductions through improved water management and conservation practices.
>
> The Department will take such steps as may be economically and technically feasible to control specific controllable sources by use of the antidegradation policy set forth in these standards (Standards of Surface Water Quality State of North Dakota, Section VII, North Dakota State Department of Health, 1973).

Such a recognition of the problem of salinity by the Department certainly leaves the "door open" to the possibility of controls on irrigation return flow.

South Dakota has promulgated water quality standards that include reference to irrigation return flows. These standards were discussed earlier in this section. Regulations have been proposed, however, which do contain significant reference to irrigation return flow. The key proposals are that as a general rule, "Discharge of pollutants from agricultural and silvicultural activities, including irrigation return flow and runoff from orchards, cultivated crops, pastures, rangelands, and forest lands, will not require an NPDES permit provided such discharge does not fall under the requirements of Section 34 R.606 to 34 R.611, inclusive" (S.D. Proposed NPDES Permit Regulations, Ch. 34:04:06:05, 1975). Discharges from irrigation return flow do require permits, described as follows:

> Discharges of irrigation return flow, including but not limited to, tailwaters, tile drainage flow, surfaced ground water flow, and bypass water if there is a point source of discharge, whether natural or artificial, and the return flow is from land areas of more than one hundred sixty contiguous acres, or one hundred sixty noncontiguous acres which use the same drainage system (S.D. Board of Environmental Protection, NPDES Permit Regulations, Ch. 34:04:06:09, 1975).

Finally, the Secretary of the Department of Environmental Quality has the authority to require a permit under the NPDES system if the agricultural activity is causing a violation of Surface Water Quality Standards, as set out in 34:04:02 to 34:04:04 and the activity is of a continuing nature (S.D. Board of Environmental Protection, NPDES Permit Regulations, Ch. 34:04:06:10, 1975). As of January 1, 1977, these regulations have not been officially adopted, the reason being that South Dakota has not been designated by EPA to administer the NPDES program. South Dakota does, however, have an agriculture applicator licensing program administered by The Department of Agriculture. Oklahoma has adopted regulations for return flow streams and mixing zones, but not specifically for the source of pollutant from irrigated agriculture.

The remaining states have no regulations per se on this topic. There are features of many of the states' laws and activities that do need to be discussed, however. The remainder of this section addresses key features of selected state laws and controls. The reader is directed to Section 7 and the subsection pertaining to Present State Activities for further explanations of state programs or lack thereof in this field of water quality control.

In most states, irrigation return flows are ignored, exempted, or subject to qualifications in the application of control regulations. The Water Quality Control Council in Arizona may make a determination that water quality standards do not apply when the entire flow in a watercourse that would otherwise be dry is effluent from agricultural irrigation return flow (Arizona Water Quality Standards, R9-21-210A). Furthermore, water quality standards do not apply to the collection, return, or drainage of agricultural irrigation return flows, excess or tailwaters to canals, laterals, or other manmade irrigation water delivery facilities within an irrigation system, or chemical maintenance (algae and weed control) of irrigation facilities within an irrigation system where agriculture is the only designated primary beneficial use, or physical or mechanical maintenance of irrigation facilities within an irrigation system. But, the law of Arizona does make it unlawful for any person "...to discharge any agricultural, irrigation or drainage waters into waters of the state and thereby reduce the quality of such waters below the water quality standards established therefor by the Council in violation of an order issued pursuant to Section 36.1854" (A.R.S., Sec. 36.1858).

California applies a unique approach to handling the irrigation return flow problem. First of all, irrigation return flow is not treated as a point or non-point source. It is simply looked at as a water quality degradation problem. The state is divided into various regions. Each region has the authority to allocate the water quantity and control the water quality within its region. The State Water Resources Control Board may adopt guidelines which set forth minimum standards for the disposal of wastes (Calif. Regs., Sec. 2555), and each Regional Board develops its own system of regulations to comply with the NPDES (23 Calif. Adm. Code, Chap. 3).

Regualtions in the Central Valley Region dealing with agricultural water quality problems are indicative of regulations in other regions and will be discussed in detail. A monitoring and planning program constitutes a water quality control program for agricultural activities. Monitoring programs will determine the quality and quantity of supply waters entering agricultural areas and return flows from agricultural areas entering streams and/or receiving waters. A monitoring program may be carried out under permits which have been issued to agricultural areas for either two or five-year periods. Through the planning process, agricultural discharges which can be controlled by a permit are to be identified and permits issues. These programs will develop the best management practices for agriculture which will reduce pollutant loads to surface waters, and develop policies or guidelines for individual farm operations and basin-wide management problems. As has been stated before, the California approach to meeting EPA's requirements of issuing permits for irrigation return flows as a point source is to identify all entities within an irrigation system or subsystem from which discharges can be identified and monitored, and allow these entities to cosign the permit. This satisfies EPA and enables the state to decentralize monitoring and management to the local entities while retaining control and enforcement if necessary. On August 12, 1974 the Agricultural Water Quality Advisory Committee made recommendations on the monitoring of irrigation return flows. These recommendations cover the monitoring parameters, accepted measurement techniques, monitoring period and quality control practices. Appendix 2-B of the California report (Section 2 of Appendix A of this report) contains the recommendation verbatim.

In Colorado, a permit is not required for any flow or return flow of irrigation water unless a federal act or regulation so requires (C.R.S., Sec. 25-8-506). The Colorado General Assembly took particular issue with this topic by defining irrigation return flow and separating water delivery from return flow as follows:

> 'Irrigation return flow' means tailwater, tile drainage, or surfaced groundwater flow from irrigated land, in a system operated by public or private organizations or individuals, if:
>
> (A) There is a point source of discharge (e.g., a pipe, a ditch, or any other defined or discrete conveyance), whether

> an artificial or a natural feature of the land, purposely maintained as a drainage structure;
>
> (B) The return flow is from land areas of more than three thousand contiguous irrigated acres or three thousand noncontiguous irrigated acres which use the same artificial drainage system or natural feature of the land purposely maintained as a common drainage structure;
>
> (C) The discharge from the lands (as opposed to the water supply to the lands) is controlled by one public or private organization or one individual. Irrigation return flow is concerned with the drainage from irrigated lands. *It does not include the delivery of irrigation water* (C.R.S., Sec. 25-8-502, emphasis added).

Idaho did accept the designation of irrigation return flows as point source discharges, but has not been delegated by EPA to carry out the federal NPDES program. Consequently, the regulations described above that have been developed are for implementation under the state permit program. The approach that Idaho prefers to follow for all other irrigation areas not included as "large irrigation projects" is first simulated voluntary abatement through development of on-farm techniques and better irrigation management practices. The intent is to solve the problem voluntarily rather than using mandatory regulations which may require costly treatment facilities (see Appendix A, Section 4.5.2).

Although Montana has no specific regulations pertaining to irrigation return flow, the policy of the state strongly implies that action will be taken to protect receiving streams from *runoff or percolation* where unreasonable land, soil and water conservation practices have been applied.

A number of states have retained regulations adopted prior to the decision of *N.R.D.C. v. Train* (1975) which were based upon the original regulations promulgated by EPA (Idaho, Nebraska, Nevada). These regulations exempt irrigation return flows except if the return flows are from lands of more than 3,000 acres or 3,000 noncontiguous acres discharging into the same drainage systems. This exemption was struck down in the N.R.D.C. case and the states are merely waiting for new federal regulations before amending or trying to carry out the existing ones.

SUMMARY

Every one of the seventeen western states has enacted water pollution control laws that can be used to abate identifiable discharges that exceed water quality standards in receiving streams or effluent discharge standards. For irrigation return flow quality control, the laws often reflect the strong agricultural interests that prevail in these western states. However, control under the general pollution laws and regulations are special and related legislation where the problem is significant. Specific regulations do not exist for irrigation discharges in the majority of states because of the vacillations in the federal regulations. Once EPA promulgates its new regulations, the water quality agencies of most states that have accepted the NPDES program will undoubtedly adopt regulations of similar or identical pattern.

SECTION 6: WESTERN WATER ADMINISTRATION

CONTENTS

WESTERN WATER ADMINISTRATION. 62

ACTIVITIES OF WATER ADMINISTRATION AFFECTING AGRICULTURE. 62

AGENCY DUTIES 62

    Water Quantity Control 62
    Water Planning and Development 64
    Water Quality Control. 65

STATUS OF STATE WATER ADMINISTRATION. 65

TRENDS AND POTENTIALS 69

SECTION 6

WESTERN WATER ADMINISTRATION

ACTIVITIES OF WATER ADMINISTRATION AFFECTING AGRICULTURE

Under the system of government that exists in the United States, laws enacted by legislative bodies and constitutional declarations are to be implemented by the executive branch. Through time, a strong system of administrative and regulatory agencies within this branch has evolved to actually carry the mandates. These agencies have become known as the fourth branch of government due to the vast power and influence gained during the last century. They have authority under most organic (enabling legislation) acts to promulgate rules and regulations that serve to guide the agency personnel in performing their duties and inform the public of procedures and programs to be followed in dealing with the agency. These regulations often "fill out" the policy directives and general approaches contained in the law. In addition, some state legislatures have passed administrative procedures acts which define the basic conduct to be followed by all state agencies.

In the area of water resources, there are three basic functions delegated to agency activities in the western states. They are: 1) water quantity control; 2) planning and development of water resources utilization; and 3) water quality control. The laws for quantity and quality control to be carried out by agency action are the subject of Section 5 and report in Preface, respectively. The evolution and specific duties and activities, as well as the organizational variations that occur in present state water administration, are the topic of this section.

AGENCY DUTIES

For the purpose of this report, state water agencies concerned only with water pollution control, water quantity control and planning and development have been examined. In each state, however, there are often a myriad of agencies with some jurisdiction affecting water resources. The duties and activities amongst the states are fairly similar within the basic function. For that reason, the discussion is divided into a general description along function lines.

Water Quantity Control

The agency responsible for administering the water quality or water rights laws in each state has several standard duties to perform. These duties include:

1. water allocation for use under a water right;
2. adjudication of water rights (permits, license, or decree);
3. distribution of water according to priorities of right;
4. general administration and enforcement of the law.

In most states, all four duties are performed by the state agency with joint action of the agency and courts in adjudicating water rights. There are several exceptions. In Colorado, special water courts (one in each of the seven divisions) allocate unappropriated water and decree the water rights. Wyoming's Board of Control acts in a quasi-judicial function in adjudicating water rights.

In addition to these four duties, some of the more specific tasks performed by the water quantity agency include:

- gather data on water availability and use and unappropriated supplies;
- conduct studies and investigations on extent and potential of ground and surface water development;
- receiving, examining and granting or denying applications for water rights, changes in place and type of use, point of diversion, or nature of use;
- maintain a registry of water rights;
- licensing of well drillers;
- review and approve or reject formation of irrigation districts;
- provide technical advice;
- carry out and enforce rules and regulations adopted by the agency, or the policy board, or commission of the agency;
- inspect dams and measuring equipment;
- prepare state water plans and basin studies;
- organize the state into divisions and/or districts;
- appoint division and/or district officers and watermasters;
- regulation of ground water withdrawals;
- allocation and control over development, use and conservation of geothermal resources.

In many states, the director of the water agency must be a registered engineer (i.e., Nevada and Wyoming). Normally, he has a central office staff and field staff, including local water masters or commissioners to assist in the implementation of the law and agency duties.

One particularly interesting feature in Nevada concerns the power of the State Engineer to insure that laws under his jurisdiction are carried out. This feature is the power granted the State Engineer and his assistants to arrest any person violating the water laws (N.R.S., Sec. 533.475). The arrested person is turned over to the sheriff or other police officer and a written complaint is filed by the arresting water official. It is a particularly frustrating experience for water officials to know of violations of the water law (i.e., wasteful or non-beneficial use practices, stealing water, etc.) and also know that by the time a complaint is served by the sheriff's office, the violations will have ceased. Often, procedural rules require notice to the violator before any enforcement actions can be taken. A recent change in Colorado law took away the power similar to that granted in Nevada and for practical purposes has hamstrung local enforcement.

Water Planning and Development

In a number of states (i.e., California, Colorado, Texas, and Utah), planning and development of water resources is carried out by an agency independent of the "water rights" office. In others (i.e., Montana, Washington and Wyoming), this activity is one of the tasks of the central agency.

This function generally carries with it several specific tasks. Among the most important are:

- preparation of state, basin and local water plans;
- planning, development, construction, and operation or supervision of water projects;
- acquisition of water rights for water projects and contracting out the use of water;
- administration of financial programs for improvement of water delivery and use.

The latter task is important to the irrigation return flow quality control efforts of the Federal and state Governments. A number of states have incentive programs which provide low or no-interest loan and grant programs (i.e., Colorado, New Mexico, Utah, and Wyoming). But the present programs limit the use of funds only by irrigation districts or other public entities for improvement of storage and delivery systems as they relate to improved efficiency in water quantity use. Water quality improvement is normally not one of the objectives of these state programs.

Water Quality Control

Since the late 1950's, most states have reorganized the water quality control agency(ies) along the pattern required under federal legislation to comply with federal law (California has done this since 1949). Where in the past water pollution control was one activity of the Public Health Service, under the current reorganizations, it has become one of the major activities being carried out by a state agency. In some cases, the function is still within a Department of Health (i.e., Arizona, Colorado, North Dakota, Utah), whereas in other states it is within the Department of Environmental Quality (i.e., Oregon and Wyoming) or Ecology (Washington), Environmental Improvement Agency (New Mexico), or directly under the Water Quality Board (Texas). In all cases, a water quality control commission, board or council is the policy and rule-making body, while the Department, Service or Bureau of Water Quality is responsible for implementing the laws, rules and standards.

Some of the more important tasks of the water quality control agency include:

- developing and maintaining comprehensive and effective programs for prevention, control and abatement of water pollution and protection of water quality;
- classifying water streams and bodies of water;
- promulgating water quality standards, effluent limitation standards, and control regulations;
- carrying out a permit program for pollutant discharges;
- reviewing and granting permission and funding for location, design, construction, and operation of sewage treatment facilities;
- authorizing and monitoring underground injection of pollutants;
- serving as hearing board or officer in resolving matters of enforcement of the pollution laws;
- ordering the cessation or abatement of discharges;
- receiving and allocating funds for grants and loans made available by Federal and state Governments;
- Carrying out investigations to determine nature and source of pollutant discharges.

STATUS OF STATE WATER ADMINISTRATION

When the original water quantity and quality agencies were created, there was little need, if even the thought occurred, to focus also upon water planning and development as a state agency function. The two initial agencies of concern to this report were the Public Health Service and State Engineer, or names comparable to the quality and quantity function they performed.[1]

Figure 5 illustrates the range of organizational arrangements that evolved and exist today, beginning with the Type 1--Basic agencies described above. Since 1970, most of the state agencies were reorganized, and many states have reorganized a number of times. But the basic schemes can be seen in Figure 5 as variations of Type 2--Independent and Type 3--Integrated. The trend is definitely toward the Type 3 structure with contemporary objectives often reflected in the title, i.e., emphasis on environment or emphasis upon the resources. A shift has occurred away from use of the title, Office of State Engineer, or its comparable, to the more non-personal and comprehensive titles as Department or Division of Water Resources.

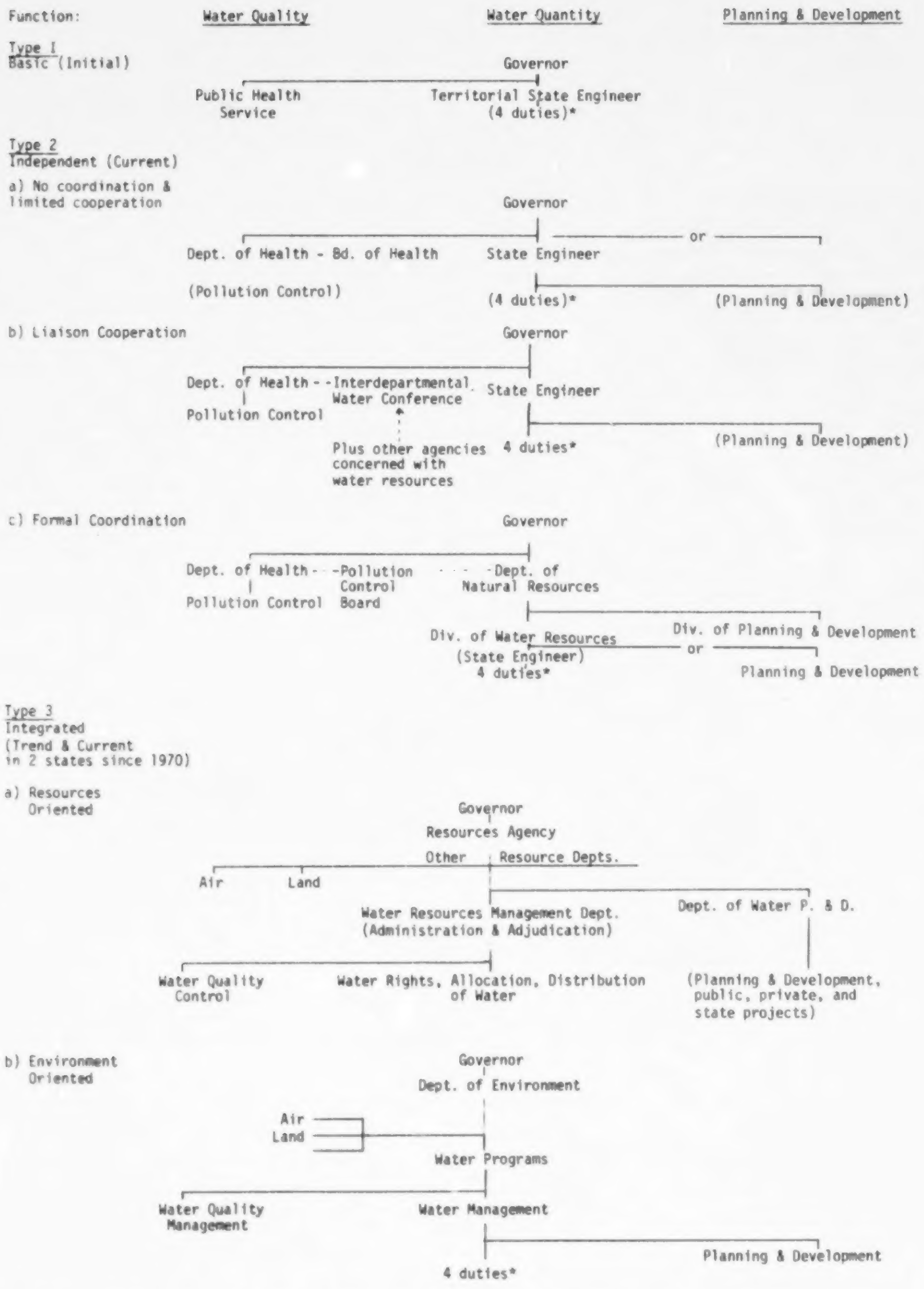
Keeping in mind that the emphasis of this report is on irrigation return flow quality control, the present organizational schemes found in the western states can be classed as Independent (Type 2) or Integrated (Type 3) agencies--that is, classified relative to the performance of the three basic functions of water quantity and quality control, and planning and development. Because of the concern with agency capability to implement an effective irrigation return flow quality control program, primary emphasis in reviewing state organizational schemes is with the degree of interaction, formal or informal, between the performance of the three basic functions. This concern is premised upon the belief that any successful program in water quality control from irrigated agriculture is by necessity required to recognize the inseparable interdependence of the allocation of water, granting of a water right, the exercise of the right through diversion and application of water to cropland, along with the other agricultural inputs such as chemicals and land use practices, the inevitable occurrence of return flows (discharges), and current ability to plan and develop the water resources cognizant of anticipated future quality problems that naturally arise from return flows.

Thus, in the Type 2--Independent class, found in the majority of states (e.g., Figure 6), the dominant features are: 1) separate agencies for water quantity and quality control; 2) the planning and development carried out, either under a separate agency or as a task of the quantity control agency; and 3) the existence of a policy and rule-making body in or over either the water quantity or quality agency. These three features do exist to some degree in every western state.

But key to this study is the degree to which either the agencies interact, or the concern of the agencies can be reflected by membership on a policy board, council, or commission. The Type 2 arrangement can then be further classified as: a) no coordination and limited cooperation; b) liasion cooperation; and c) formal coordination. In the Type 2(a) organizational structure, the three functions are often performed in a vacuum. The agencies carry out their duties "independent" of possible impacts upon the subject jurisdiction of their sister agencies.

---

[1] For example, the water quantity office was called State Water Commission, State Reclamation Engineer, Chief Engineer, or State Hydraulic Engineer in some states (Clark, 1967, Vol. I, p. 107).



*4 duties = allocation of water, adjudication of water rights, distribution of water, administration of water laws.

(Radosevich and Skogerboe, 1977)

Figure 5. Types and Evolution of Water Administration Agencies by Three Major Functions

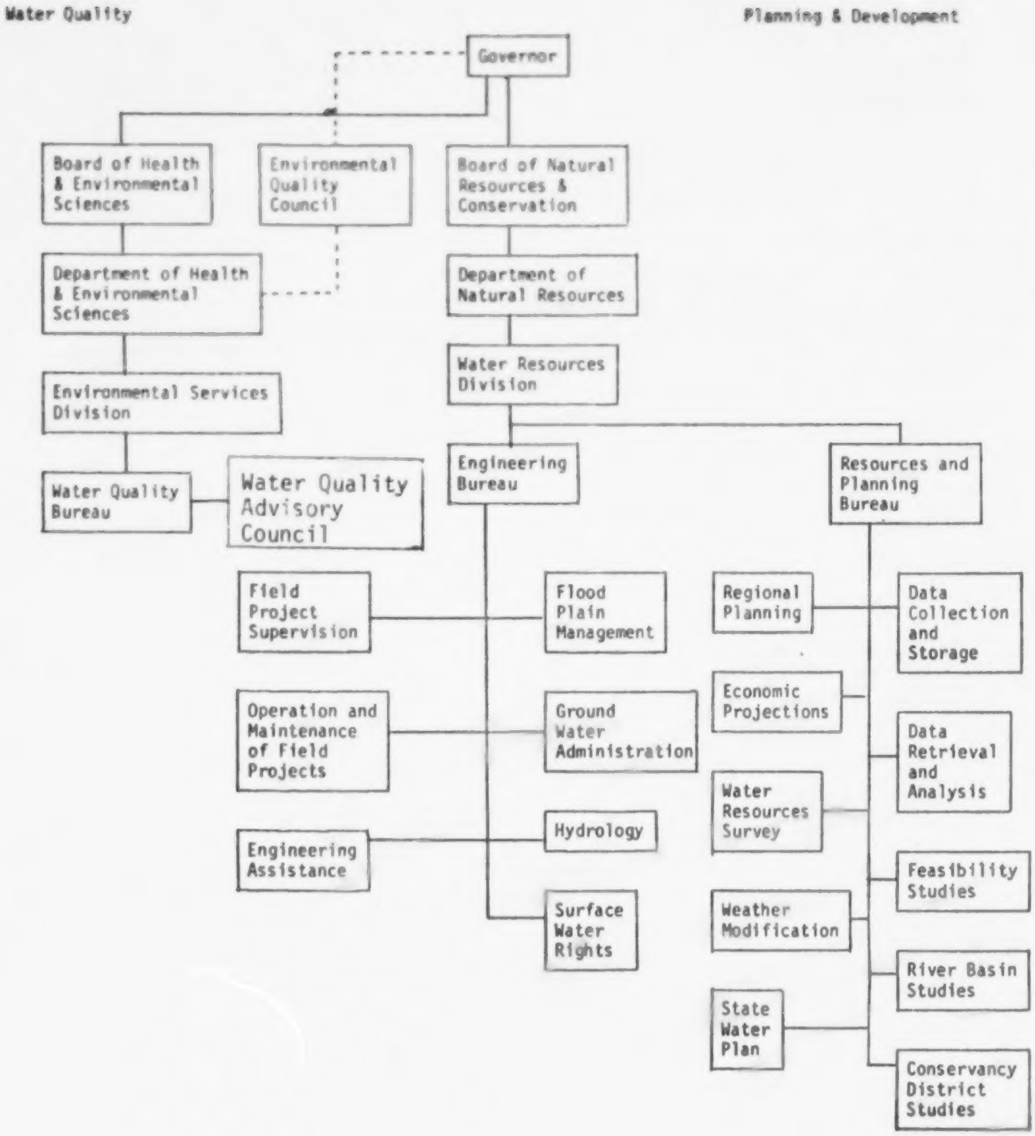

Water Quality
Planning & Development
Governor
Board of Health & Environmental Sciences
Environmental Quality Council
Board of Natural Resources & Conservation
Department of Health & Environmental Sciences
Department of Natural Resources
Environmental Services Division
Water Resources Division
Water Quality Bureau
Water Quality Advisory Council
Engineering Bureau
Resources and Planning Bureau
Field Project Supervision
Flood Plain Management
Regional Planning
Data Collection and Storage
Operation and Maintenance of Field Projects
Ground Water Administration
Economic Projections
Data Retrieval and Analysis
Water Resources Survey
Engineering Assistance
Hydrology
Feasibility Studies
Surface Water Rights
Weather Modification
River Basin Studies
State Water Plan
Conservancy District Studies

Figure 6. Water Agencies and Their Major Functions in Montana

In the Type 2(b) structure, which is the current Wyoming arrangement, the agencies act independently of one another, but there exists a mechanism for all agencies dealing with water matters to get together once a month and discuss activities and areas of concern. This scheme is called the Interdepartmental Water Conference.

The Type 2(c) organizational structure reflects the majority of state arrangements (Figures 7, 8, 9, 10 and 11). Independence of water quantity and quality agencies exists, and in some cases--such as Utah--the planning and development is also independent of the "water rights" agency. But there is established a water quality control or policy board (Kansas, Oklahoma, Oregon, and Texas), commission (New Mexico), or council (Arizona) whose membership includes representatives from at least the two agencies with jurisdiction over water quantity and quality control.

There are only two states that have integrated the administration of water quantity and quality law within one group. These two states have actually reorganized to integrate all resource control (California, Figure 12), or the major resources activities as they affect the environment (Washington, Figure 13) under one supervising agency with subdivisions or departments for water resources. In the case of Type 3(a), the emphasis is on resources with quantity and quality integrated, but with a sister department responsible for planning and development. Type 3(b) reflects the environmental limelight of the early 1970's. All three basic functions are under an office of the supervisory agency.

As previously stated, there is a definite trend toward the integrated agency approach. Several states have been contemplating reorganization for a number of years. Hutchins' statement about past changes is clearly applicable today:

> They resulted from various causes. Some are changes in name only. Others stemmed from the frequently evidenced impulse to reorganize state agencies in order to meet changing and developing public needs not always confined to water resource problems (Clark, 1967, Vol. I, p. 108).

TRENDS AND POTENTIALS

As stated earlier (Section 4), in most cases the key to minimizing irrigation return flow quality problems is to improve water management practices on the croplands. The primary constraint to implementing improved practices is water rights. Another possible constraint is funding the necessary technological irrigation system improvements in order to achieve water quality goals. At the same time, it should be recognized that improved irrigation water management practices should result in increased crop production and reduced diversion requirements. In fact, many water resources planning studies have shown that the West will have to increase the efficiency of agricultural water use in order to meet future water demands.

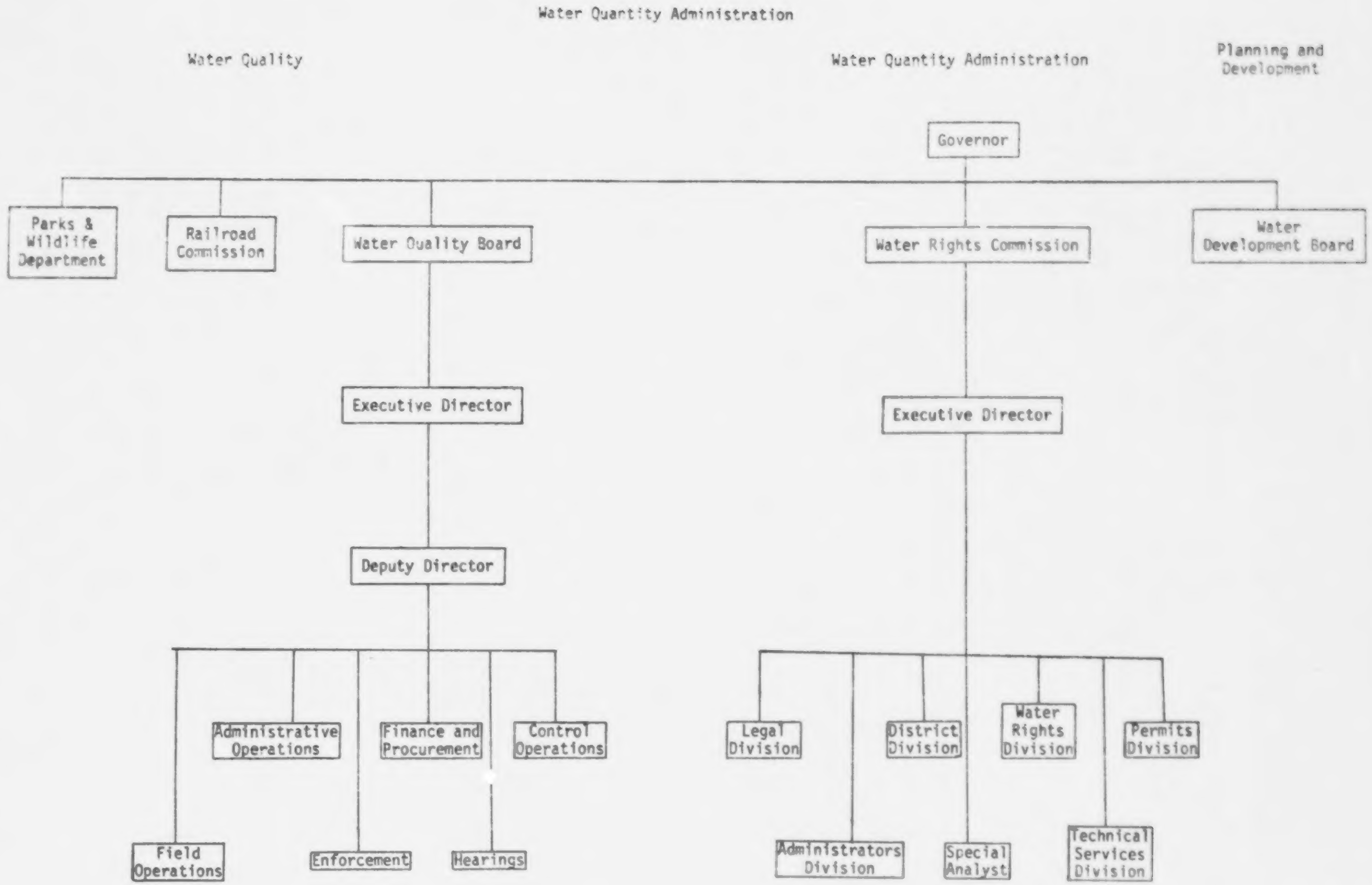


Figure 7. Water Agencies and Their Major Functions in Texas

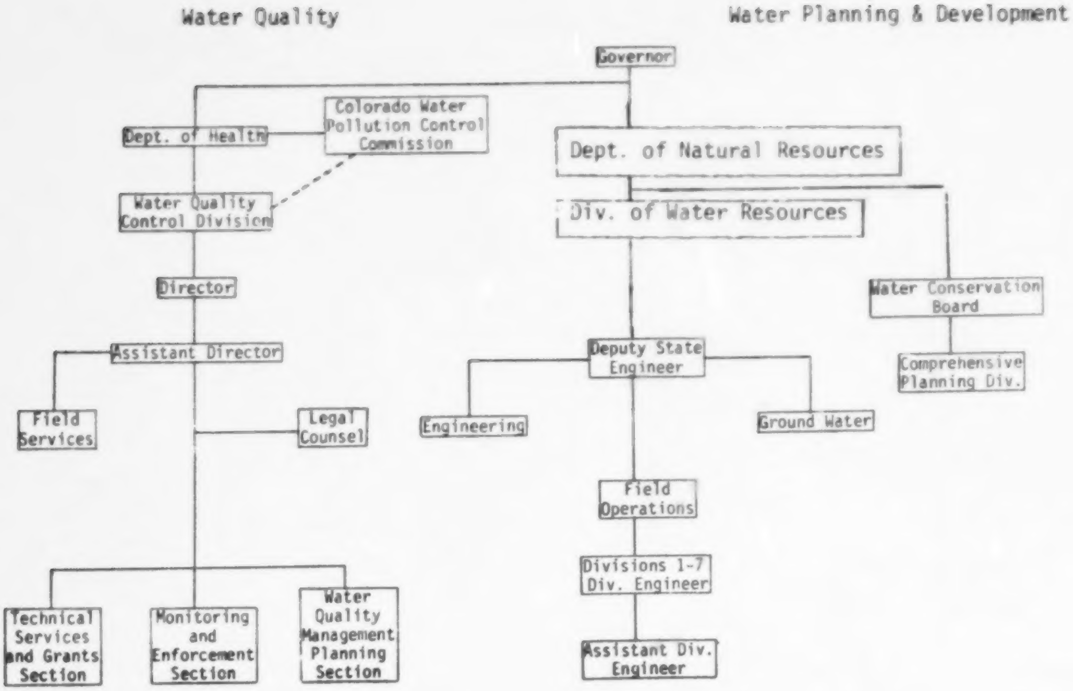

Water Quality
Water Planning & Development
Governor
Dept. of Health
Colorado Water Pollution Control Commission
Dept. of Natural Resources
Water Quality Control Division
Div. of Water Resources
Director
Water Conservation Board
Assistant Director
Deputy State Engineer
Comprehensive Planning Div.
Field Services
Legal Counsel
Engineering
Ground Water
Field Operations
Divisions 1-7 Div. Engineer
Technical Services and Grants Section
Monitoring and Enforcement Section
Water Quality Management Planning Section
Assistant Div. Engineer

Figure 8. Organization of Water Functions in Colorado

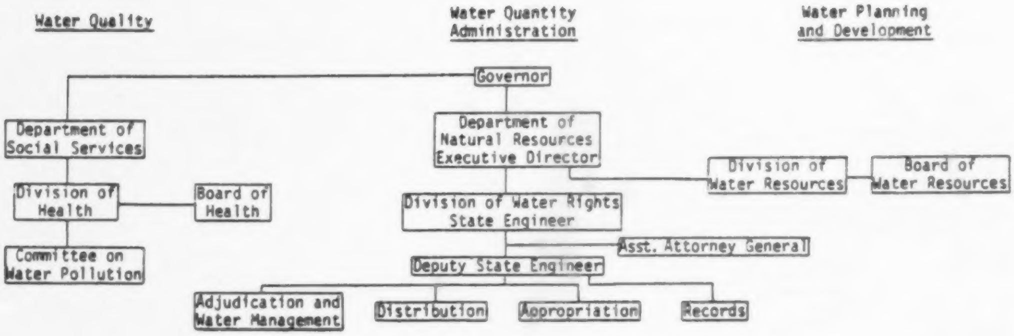

Water Quality
Water Quantity Administration
Water Planning and Development
Governor
Department of Social Services
Department of Natural Resources Executive Director
Division of Water Resources
Board of Water Resources
Division of Health
Board of Health
Division of Water Rights State Engineer
Committee on Water Pollution
Asst. Attorney General
Deputy State Engineer
Adjudication and Water Management
Distribution
Appropriation
Records

Figure 9. Utah Water Agencies and Their Functions

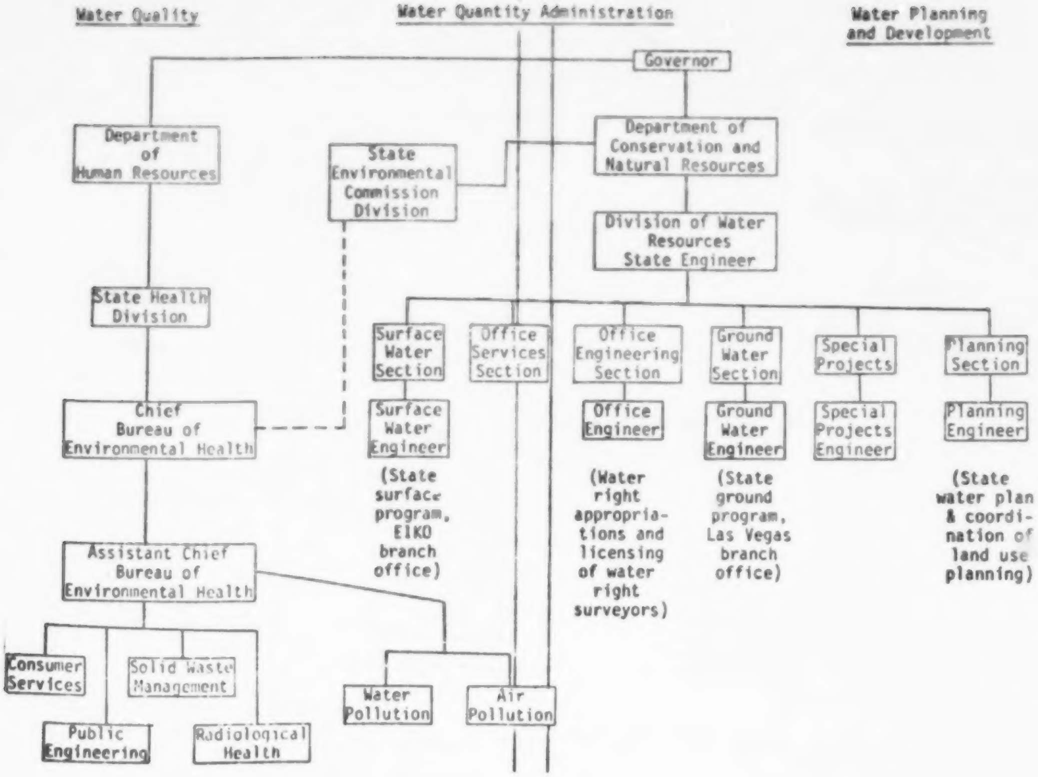

Water Quality
Water Quantity Administration
Water Planning and Development
Governor
Department of Human Resources
State Environmental Commission Division
Department of Conservation and Natural Resources
Division of Water Resources State Engineer
State Health Division
Surface Water Section
Office Services Section
Office Engineering Section
Ground Water Section
Special Projects
Planning Section
Chief Bureau of Environmental Health
Surface Water Engineer
Office Engineer
Ground Water Engineer
Special Projects Engineer
Planning Engineer
(State surface program, Elko branch office)
(Water right appropriations and licensing of water right surveyors)
(State ground program, Las Vegas branch office)
(State water plan & coordination of land use planning)
Assistant Chief Bureau of Environmental Health
Consumer Services
Solid Waste Management
Public Engineering
Radiological Health
Water Pollution
Air Pollution

Figure 10. Organization of Water Agencies in Nevada

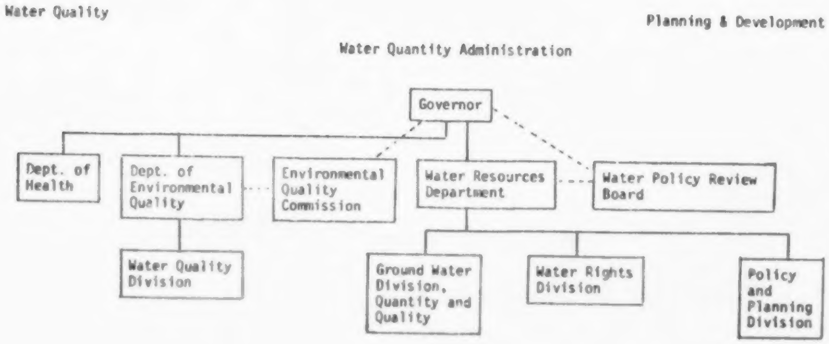

Water Quality
Planning & Development
Water Quantity Administration
Governor
Dept. of Health
Dept. of Environmental Quality
Environmental Quality Commission
Water Resources Department
Water Policy Review Board
Water Quality Division
Ground Water Division, Quantity and Quality
Water Rights Division
Policy and Planning Division

Figure 11: Organization of Water Agencies in Oregon

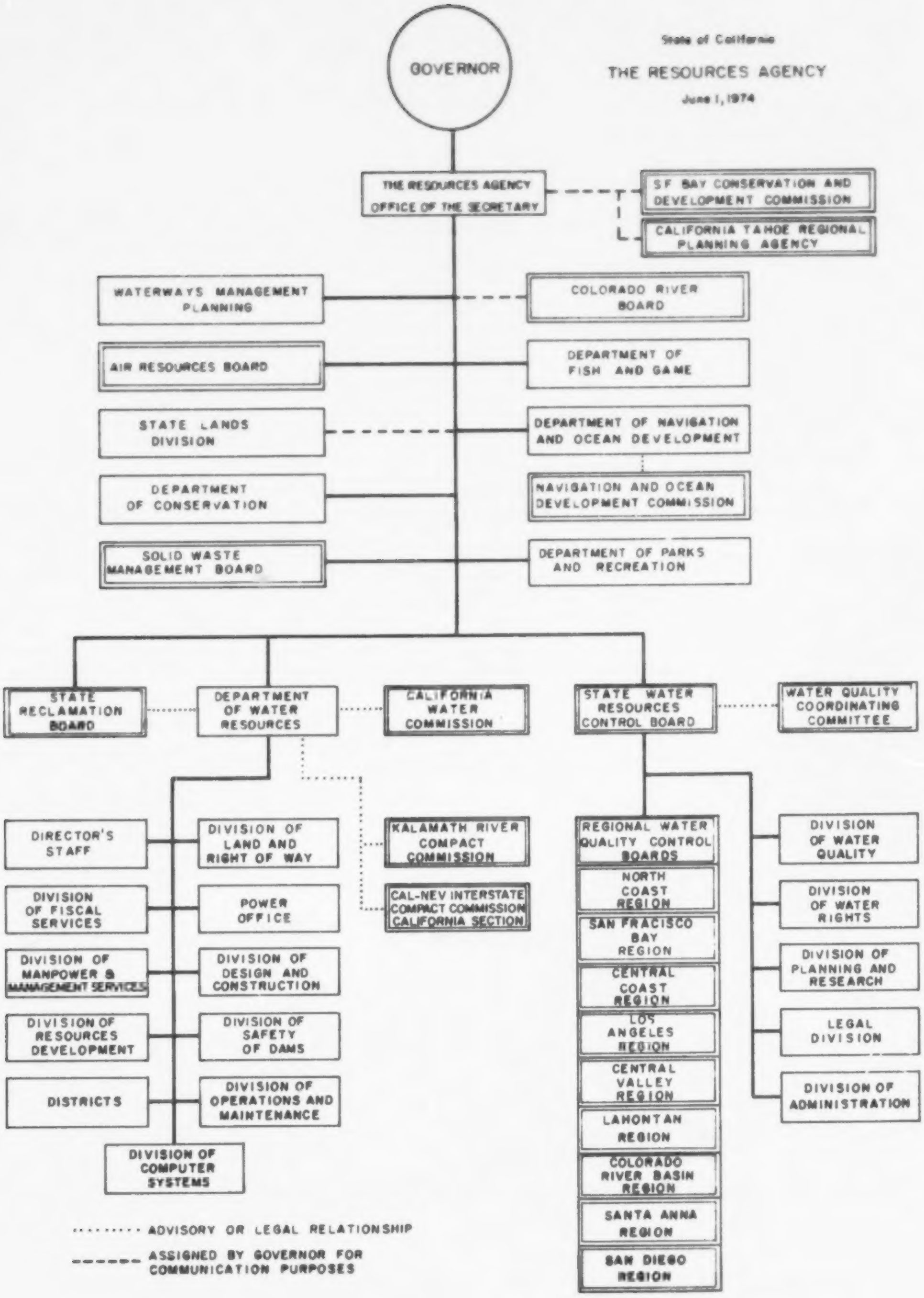

State of California
THE RESOURCES AGENCY
June 1, 1974
GOVERNOR
THE RESOURCES AGENCY OFFICE OF THE SECRETARY
SF BAY CONSERVATION AND DEVELOPMENT COMMISSION
CALIFORNIA TAHOE REGIONAL PLANNING AGENCY
WATERWAYS MANAGEMENT PLANNING
COLORADO RIVER BOARD
AIR RESOURCES BOARD
DEPARTMENT OF FISH AND GAME
STATE LANDS DIVISION
DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT
DEPARTMENT OF CONSERVATION
NAVIGATION AND OCEAN DEVELOPMENT COMMISSION
SOLID WASTE MANAGEMENT BOARD
DEPARTMENT OF PARKS AND RECREATION
STATE RECLAMATION BOARD
DEPARTMENT OF WATER RESOURCES
CALIFORNIA WATER COMMISSION
STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY COORDINATING COMMITTEE
DIRECTOR'S STAFF
DIVISION OF LAND AND RIGHT OF WAY
KALAMATH RIVER COMPACT COMMISSION
DIVISION OF FISCAL SERVICES
POWER OFFICE
CAL-NEV INTERSTATE COMPACT COMMISSION CALIFORNIA SECTION
DIVISION OF MANPOWER & MANAGEMENT SERVICES
DIVISION OF DESIGN AND CONSTRUCTION
DIVISION OF RESOURCES DEVELOPMENT
DIVISION OF SAFETY OF DAMS
DISTRICTS
DIVISION OF OPERATIONS AND MAINTENANCE
DIVISION OF COMPUTER SYSTEMS
REGIONAL WATER QUALITY CONTROL BOARDS
NORTH COAST REGION
SAN FRACISCO BAY REGION
CENTRAL COAST REGION
LOS ANGELES REGION
CENTRAL VALLEY REGION
LAHONTAN REGION
COLORADO RIVER BASIN REGION
SANTA ANNA REGION
SAN DIEGO REGION
DIVISION OF WATER QUALITY
DIVISION OF WATER RIGHTS
DIVISION OF PLANNING AND RESEARCH
LEGAL DIVISION
DIVISION OF ADMINISTRATION
········· ADVISORY OR LEGAL RELATIONSHIP
------ ASSIGNED BY GOVERNOR FOR COMMUNICATION PURPOSES

Figure 12. Water Agencies and Their Major Functions in California

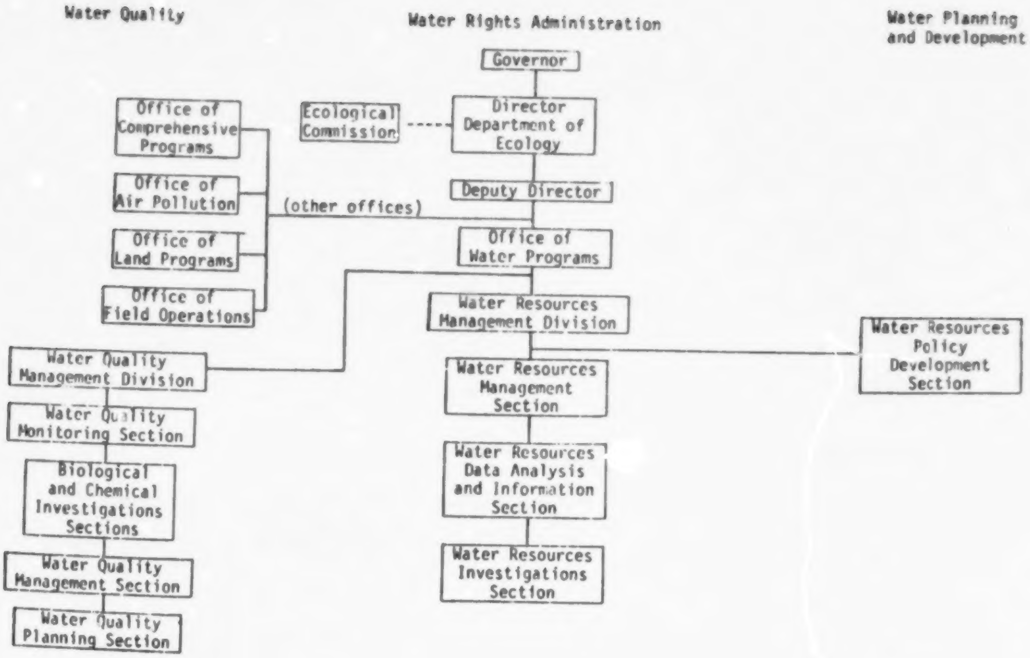

Water Quality
Water Rights Administration
Water Planning and Development
Governor
Ecological Commission
Director Department of Ecology
Office of Comprehensive Programs
Office of Air Pollution
Office of Land Programs
Office of Field Operations
(other offices)
Deputy Director
Office of Water Programs
Water Resources Management Division
Water Resources Policy Development Section
Water Quality Management Division
Water Quality Monitoring Section
Biological and Chemical Investigations Sections
Water Quality Management Section
Water Quality Planning Section
Water Resources Management Section
Water Resources Data Analysis and Information Section
Water Resources Investigations Section

Figure 13: Water Agencies and Their Major Functions in Washington

The above argument shows that improved irrigation water management practices in any particular area may be a primary concern of both the water quality function (clean water) and the planning and development function (planning to meet future water demands and development of improved irrigation systems to conserve water). At the same time, the major constraint to improvement is water rights, which involves the water quantity function. Therefore, it becomes highly important that these three basic water functions focus upon the total problem, which requires a coordinated and cooperative approach in setting goals and priorities, developing appropriate solutions, and implementing acceptable approaches.

Coordination and cooperation implies some form of linkage between the three water functions, either formal or informal. As a minimum, in those states having each function in a separate state agency or in two state agencies, there must be a strong communication link between the agencies, the success of which may largely be dependent upon personalities. Placing all three functions within one agency, such as Washington's Department of Ecology, certainly can be expected to facilitate coordination and cooperation, but the latter is still highly dependent upon the personalities involved.

There is a definite awareness among state water agency personnel of the need to strengthen coordination and cooperation because of the increasing complexity of water problems. Future water resource development projects will be much more difficult than those of the past, with an environmental consciousness being a necessary dimension that will result in better planning and development, while at the same time confounding the problems. Add to these difficulties the necessity in the future to "improve what we have," along with inheriting water laws which inhibit improved water management practices, and the result is a paradox that perhaps can only be modified or changed out of sheer "necessity."

The present system of water allocation and distribution, administration of the law and water right adjudication practiced in the majority of western states does contribute substantially to the irrigation return flow quality problem. By law, a water right can be reduced or lost through non-use. Consequently, this disincentive compels appropriators to divert and apply the entire quantity provided for in the right, even though this practice may lead to drainage problems and adversely affect downstream users. The law further stifles any initiative to install water saving practices in certain states by preventing the use of saved water on other lands or for other purposes. Under these and other legal constraints that exist in the water laws, farmers have no economic incentive to alter their present practices for improved techniques.

A water "management" orientation requires ideally that all of the water functions be conducted in an integrated manner in order to develop the waters of the state, while maintaining the environment, for the common good of the most people. Some examples involving integration of duties are: 1) incorporate water quality into water rights; 2) define beneficial use considering standards and criteria that are pertinent to local conditions of climate, soils and crops; 3) incorporate water quality and environmental issues in water resources planning and development; 4) make state funds available for water resources development also available for improving existing irrigation systems in order to conserve water and alleviate water quality degradation; and 5) incorporate incentives into water laws that will facilitate improved water management practices.

The appropriation doctrine in its basic form is perhaps still the most ideal legal structure due to its general characteristics of continuity, flexibility and identity. But we must be compelled to move from the "use oriented" legal control system to a "management oriented" well designed and uniform set of laws and policy instruments, taking into account the total environmental impact, yet flexible enough to sustain change. No longer can states utilize their waters independent of the impact upon their neighbors. However, the underlying manifestations of change in philosophy must take into account the established rights and duties of water users and the social structure engendered under the existing system.

SECTION 7: EFFORTS TO CONTROL IRRIGATION RETURN FLOW QUALITY

CONTENTS

EFFORTS TO CONTROL IRRIGATION RETURN FLOW QUALITY. 78

BACKGROUND OF FEDERAL POLLUTION CONTROL. 78

Water Pollution Control Act of 1948 78
Federal Water Pollution Control Act Amendments of 1956. 79
Federal Water Pollution Control Act Amendments of 1961. 80
Water Quality Act of 1965 80
Clean Water Restoration Act of 1966 82
Water Quality Improvement Act of 1970 82
Summary of Legislative Achievements Up to 1972. 82

PRESENT FEDERAL APPROACHES 83

Federal Water Pollution Control Act Amendments of 1972. 83
Colorado Salinity Control Act 104

RESULTS FROM RECENT GOVERNMENTAL INVESTIGATIONS. 105

Senate Select Committee on National Water Resources 105
National Water Commission 106
National Commission on Water Quality. 106
Westwide Study. 111
Summary of Federal Activities 113

PRESENT STATE ACTIVITIES 114

Extent of Irrigation Return Flow. 114
Approaches to Irrigation Return Flow Quality Control. 116
Extent of Control 119
Agency Resources and Interaction. 119
Attitudes Toward the Federal Program. 121
Summary of State Activities 122

SECTION 7

EFFORTS TO CONTROL IRRIGATION RETURN FLOW QUALITY

BACKGROUND OF FEDERAL POLLUTION CONTROL

Water Pollution Control Act of 1948

From 1900 to 1948, more than 100 bills dealing with problems of water pollution were introduced by Congress with little success.[1] However, these efforts culminated in the passage of the first comprehensive thrust toward water pollution control by the Federal Government (A Water Policy, Vol. 1, 1950, p. 185). This legislation was the Water Pollution Control Act of 1948 (Act of June 30, 1948, Ch. 758, 62 Stat. 1155, P.L. 80-845; 33 U.S.C.A. 1151 et. seq.). The Act declares it to be the policy of Congress to:

> ...recognize, preserve, and protect the primary responsibilities and rights of the States in controlling water pollution; to support and aid technical research; to devise and perfect methods of treatment of industrial wastes which are not susceptible to known effective methods of treatment; and to provide Federal technical services to State and interstate agencies and to industries, and financial aid to State and interstate agencies and to municipalities (1948, U.S. Code Congressional Service, p. 2215).

The law empowered the Surgeon General of the United States to assist and encourage state study plans and supporting research and provided for low interest loans up to $200,000 for sewage and waste treatment works (Ibid., p. 2215-2217). Further, the 1948 Act declared the pollution of interstate waters to be a public nuisance subject to abatement. The Surgeon General had to give formal notification to the discharger and to adivse the appropriate state or interstate agency when he found any pollution which had been declared to be a public nuisance (Ibid., p. 2216).

---

[1] The history of water pollution control in the United States is very fascinating, but beyond the scope of this report. The authors suggest interested readers refer to the following: Clark (ed.), Waters and Water Rights, Vol. 3, "Water Pollution and Quality Controls," by Gindler, 1967; Davies, The Politics of Pollution Control, 1974; Barry, "The Evolution of the Enforcement Provisions of the Federal Water Pollution Control Act: A Study of the Difficulty in Developing Effective Legislation," 86 Mich. Law Review, 1103, 1970; Reitze, Environmental Law, Ch. 4, 1972. See Selected Legal References for the Use of the Upper Colorado River Commission, Vol. 1 (1965), Vol. II (1971) and Vol. 3 (1975) for detailed notes of section by section changes in the water pollution laws from 1948 to 1972.

The Act, however, did not provide the Federal Government with any original enforcement powers other than to hold public hearings on pollution violations. If the pollution continued contrary to recommendations based upon the public hearings, the Federal Security Administrator could, with the consent of the appropriate state water pollution control agency, request the U.S. Attorney General to bring suit to prevent the pollution (A Water Policy, Vol. 1, 1950, p. 192).

Finally, this Act established the Water Pollution Control Advisory Board which was in the Public Health Service and was composed of the Surgeon General, a representative of the Departments of Army, Interior, Agriculture, the Federal Works Agency and six persons to be appointed by the President (1948 U.S. Code Congressional Service, p. 2217).

The terms of this legislation were extended through fiscal 1956 by the Act of July 17, 1952 (Act of July 17, 1952, Ch. 927 66 Stat. 755). Although this Act was experimental and was initially limited to a trial period of five years, it served as the basis for the current Federal Water Pollution Control Act which has been amended seven times to date.

Federal Water Pollution Control Act Amendments of 1956

In 1952, the 1948 Act was extended to 1956. By its second expiration date, Congress placed this legislation on a permanent footing by enacting the Water Pollution Control Act Amendments of 1956 (Act of July 9, 1956, Ch. 518, 70 Stat. 498; P.L. 84-660; 33 U.S.C.A. 1151 et. seq.). The Act of 1956 brought about a permanent national water pollution control program and permitted the Federal Government to participate and cooperate in the development of comprehensive pollution abatement programs. This law re-emphasized the policy of the Congress to recognize, preserve and protect the primary rights of the states in controlling water pollution and expanded the Water Pollution Control Advisory Board (1956, U.S. Code Congressional and Administrative News, p. 3028-3029). The Act was under the administration of the Surgeon General of the Public Health Service.

The Act provided for studying water pollution problems and for financing matching grants to municipalities for construction of treatment plants. Also, the Act provided a weak conference procedure to abate pollution of interstate waters. If a polluter failed to take action to abate pollution after notice from the Surgeon General, the Secretary of Health, Education and Welfare could call for a public hearing. The hearing board would make recommendations to secure abatement (Ibid., p. 3029). The Secretary would then send a copy of the hearing board's findings and recommendations to the polluter along with a notice which would specify a reasonable time to abate the pollution (not less than six months). If no action was taken, the Secretary would send an additional notice and specify a time, not less than three months, to abate the pollution. If this last notice produced no results, the Secretary could request the Attorney General to bring suit on behalf of the United States to abate the pollution. This enforcement conference procedure has not been used effectively very often, however.[2]

The law provided $3 million a year in grants for fiscal years 1957-1961 to assist in the preparation of state plans for pollution control and $500 million for grants to assist in the construction of sewage treatment plants for fiscal years 1957-1966 (Sheaffer, 1972, p. 990).

Federal Water Pollution Control Act Amendments of 1961

In 1959, the U.S. Senate created the Senate Select Committee on National Water Resources and charged the Committee with the task of conducting exhaustive studies into water resources activities in the United States and to determine future water quantity and quality activities needed for various water uses. The Committee suggested action in five general areas, including water quality improvement through more adequate pollution abatement programs. The Water Pollution Control Act amendments of 1961 were greatly influenced by the Committee's report (History of the Implementation..., 1969).

The 1961 Act extended and strengthened the Federal Water Pollution Control program and assisted the states and local communities in providing for more effective programs of water pollution control (Act of 1961, 75 Stat. 204, P.L. 87-88). It took the administration of the FWPCA[3] from the Public Health Service and vested in the Secretary of Health, Education and Welfare full responsibility for conducting the federal water pollution control program and authorized the establishment and maintenance of field laboratory and research facilities. Grants to state and interstate agencies for the operation of water pollution control programs were increased. Federal enforcement jurisdiction over interstate waters was reasserted and the federal pollution abatement enforcement authority was expanded to all navigable and coastal waters. The Secretary of HEW was authorized to issue final orders in enforcement actions and discharges from federal installations were included in all administrative findings and recommendations in federal abatement action (1961, U.S. Code Congressional and Administrative News, p. 2076).

Water Quality Act of 1965

Water pollution control in the United States had not been progressing as rapidly as Congress had hoped for since the basic FWPCA of 1956 was enacted. It appears that in 1965, Congress dusted off a 1950 recommendation by the President's Water Resources Policy Commission that if the:

---

[2] For an examination of the use of enforcement conferences and their effectiveness in five states selected for their range in pollution problems and funds spent on control (Mississippi, New York, Texas, Washington, and Wyoming), see Lieber, Federalism and Clean Water, Ch. 7, 1975.

[3] FWPCA is often used to refer to the Federal Water Pollution Control Act as amended. It should not be confused with the Federal Water Pollution Control Administration also abbreviated FWPCA, which was created in 1965 to head up the implementation of the Act. The latter was renamed Federal Water Quality Administration, FWQA, in 1970.

> Federal-State-Local cooperative pollution control programs fails to provide the country with clean rivers within a period of 10 years, the 1948 Act (Federal Water Control Act of 1948) should be reconsidered with a view to providing for Federal enforcement, without the requirements of State consent, where polluted streams are within the jurisdiction of Congress (A Water Policy, Vol. 1, 1950, p. 195).

Important consideration was given to the administrative capability of the executive branch to carry out any new legislation on water pollution control. In adopting the Water Quality Act of 1965, Congress directed that within ninety days from the effective date of the Act, an organization called the Federal Water Pollution Control Administration (FWPCA) would be created in the Department of Health, Education and Welfare (HEW) to administer the provisions of the Act (Act of Oct. 2, 1965, P.L. 89-234, 79 Stat. 903). On February 28, 1966, President Johnson submitted Reorganization Plan No. 2 that took FWPCA out of HEW and transferred it to the Department of Interior (80 Stat. 1608). In his transmittal letter, he stated:

> ...Today we face a harsh reality. Our waters are burdened with blight. We know that every river system in America suffers from some degree of pollution. This menace is growing more serious with every passing day.
>
> We have just begun to take the steps to clean and restore our waters.
>
> ...The attack against water pollution should be unified and coordinated.
>
> ...One agency should assume leadership in our clean water effort. That agency should be the Department of Interior (Letter of Transmittal, House Doc. No. 388, 89th Congress, 2nd Session).

The Water Quality Act of 1965 is an important departure to federal involvement in pollution control. The Federal Government no longer would rely upon public action to solve pollution problems; it placed them in a direct role to control pollution if the state failed to act. The Act directed the states to adopt water quality standards and to implement plans for regulation of their interstate waters by June 30, 1967 (P.L. 89-234, Sec. 5, recodified Sec. 10(c)(1); see Sheaffer, 1972, p. 991). State standards became the federal enforcement standards upon approval of the Administrator of the Federal Water Pollution Control Administration. If state standards were adjudged inadequate or no letter of intent was filed to adopt water quality standards, the Administration was authorized to initiate adequate standards (P.L. 89-234, and 5, recodified Sec. 10(c)(2)).

The enforcement conference was retained. It could be convened by the Secretary upon the request of the Governor of any state or state pollution control agency or by the Secretary if he determined a pollution problem in navigable or interstate waters would endanger the health and welfare of persons in states other than the one in which the discharge originated (Ibid., Sec. 56, recodified Sex. 10(d)(1)). This Act also provided grants for research into better methods of controlling pollution from sewer overflows and stormwaters and increased the available construction grants for fiscal years 1966 and 1967.

Clean Water Restoration Act of 1966

The Clean Water Restoration Act of 1966 accelerated federal participation in the construction of sewage treatment facilities, authorized various pollution studies, increased the federal grants program, and encouraged water pollution control in river basin planning. This Act strengthened the enforcement conference by giving the Federal Water Pollution Control Administration authority to act on international pollution. It required that persons causing or contributing to pollution must file with the Secretary of the Interior reports which revealed the kinds of discharges being made and the facilities used to reduce the waste content of such effluents (P.L. 89-753, Sec. 208(b)). Failure to file such a report subjected the violator to a fine of $100 per day, enforced by the Attorney General.

The Act provided for federal expenditures of over $3.5 billion for the fiscal years 1967-1971, but actual appropriations were a little over 50 percent of the authorized sum for those years (Sheaffer, 1972, p. 991).

Water Quality Improvement Act of 1970

The Water Quality Improvement Act of 1970 amended the Federal Water Pollution Control Act by adding new sections on control of oil discharges, discharge of hazardous substances and discharge of sewage from vessels (Act of April 3, 1970, P.L. 91-224, 84 Stat. 91). Demonstration projects were authorized for the cleaning up of pollution in the Great Lakes and acid mine drainage. Federal agencies were also required to insure compliance with water quality standards and a program was introduced for manpower training in water pollution control.

The administration of the Water Pollution Control Act was changed in name from the FWPCA to the Federal Water Quality Administration (FWQA) (Ibid., Sec. 2). Then four months later, on July 9, 1970, President Nixon established the Environmental Protection Agency (EPA) under Reorganization Plan No. 3 of 1970, and transferred all the functions of the FWQA and those vested under the Federal Water Pollution Control Act as amended to EPA. This reorganization was done to provide a more efficient operation by the government in matters related to control of the environment. Within EPA, the FWQA became the Water Quality Office, and in 1971 the Office of Water Programs.

Summary of Legislative Achievements Up to 1972

In spite of a legislative history extending back nearly 25 years, no meaningful enforcement program for water pollution control existed in 1971 synonymous to that found for noise and air pollution abatement. The Federal Government found it necessary to reactivate key sections of the Rivers and Harbors Act of 1899 which forbid dumping of refuse into navigable waters or their tributaries without first obtaining a permit from the Corps of Engineers (Act of March 3, 1899, Ch. 425, 30 Stat. 115, Sec. 407 along with Secs. 411 and 413 is commonly called the 1899 Refuse Act).

Also, no real attempts were made during the 1950's and 1960's to develop a program to control degraded return flows from irrigated agriculture, even though both the President's Water Resources Policy Commission of 1950 and the Senate Select Committee on National Water Resources of 1961 made reference to the problems of salinity and sediment accumulations in waterways.

PRESENT FEDERAL APPROACHES

Federal Water Pollution Control Act Amendments of 1972

A comprehensive approach focusing upon the totality of water quality control was finally adopted in the Federal Water Pollution Control Act Amendments of 1972 (Act of Oct. 18, 1972, P.L. 92-500). This law, for the first time, vested in the Federal Government the power and procedures necessary to pursue the wide range of problems faced in water pollution control, while at the same time enabling flexibility in the decision-making process.

Background--

The legislative history of P.L. 92-500, as is the common reference to the Federal Water Pollution Control Act of 1972, is indeed an interesting example of strong Congressional desire to enact a viable piece of water pollution control legislation and the process of negotiation that is required when a measure has controversial components. However, as interesting as it may be, a definitive background statement is beyond the scope of this report, but can be found in the two volumes, totaling over 1700 pages, produced by the Environmental Policy Division, Congressional Research Service, Library of Congress, for the Committee on Public Works (A Legislative History of..., 1973). This brief background is provided to give the reader an insight into the Act's complex beginnings.

Preparing amendments to the Federal Water Pollution Control Act was referred to the Committee on Public Works in the House and Senate. In presenting the Senate version of the amendments, S.2770, to the Senate on November 2, 1971, Senator Muskie stated that:

> The Committee on Public Works, after 2 years of study of the Federal water pollution control program, concludes that the national effort to abate and control water pollution is inadequate in every vital aspect (Ibid., p. 1253).

The Senate approved S.2770 by a 80 to 0 vote. On March 29, 1972, the House of Representatives approved its version of the amendment, H.R. 11896, by a vote of 378 to 14.

Although the two versions were similar in many ways, major differences remained and neither legislative body would agree to amending their bill to present a unified effort. Consequently, the Senate requested a joint conference to resolve the differences. After 39 sessions, the committee reached agreement on September 14, 1972, and both Houses of Congress voted to adopt the conference report. It passed, unamended, by a House vote of 366-11 and by the Senate vote of 74-0 (Environment Reporter, Current Developments, October 6, 1972, Vol. 3, No. 23, p. 619).

The bill was sent to the White House on October 4, 1972. On October 17, 1972, President Nixon vetoed the bill saying the authorized expenditure of $24.6 billion on water pollution control would cause inflation and higher taxes (118 Cong. Record, S.18534, Oct. 17, 1972). On October 18, 1972, Congress overrode a Presidential veto by a vote in the Senate of 52 to 12 and in the House by 247 to 23 (Environment Reporter, Current Developments, Oct. 20, 1972, Vol. 3, No. 25, p. 711).

Thus, the Federal Water Pollution Control Act amendments of 1972 became law. According to the Assistant Administrator for Enforcement and General Counsel of EPA, this act would establish a rule of law in the enforcement of federal and state water quality standards (Environment Reporter, Current Developments, Nov. 3, 1972, Vol. 3, No. 27, pp. 793-795). A noted environmental author stated:

> (this act)...was needed. The existing federal water pollution laws were abominable. The major act, the Federal Water Pollution Control Act, was virtually unenforceable. Until 1972 only one law suit was even filed under that Act, against the city of St. Joseph, Missouri, and years later an unsatisfactory settlement was negotiated (Reitze, 1972, Supp. 1973, p. 22).

The major shifts in control from past legislative efforts include the maintenance of the water quality standards concept but basing control upon setting effluent standards for point source dischargers, requiring them to obtain a permit to discharge, and setting target dates for: a) achieving specific improvements in water quality; and b) use of improved treatment technology by point source dischargers.

Goals and Objectives--

The stated objective of the Federal Water Pollution Control Act of 1972 is to "restore and maintain the chemical, physical and biological integrity of the nation's waters" (P.L. 92-500, Sec. 101(a)). In order to achieve the cleaner water objective, the Act declares that:

> (1) it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;
> (2) it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;
> (3) it is the national goal that the discharge of toxic pollutants in toxic amounts be prohibited;

> (4) it is the national policy that Federal financial assistance be provided to construct publicly owned waste treatment works;
> (5) it is the national policy that areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each State; and
> (6) it is the national policy that a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans (Ibid., Sec. 101(b)).

This same section also sets forth the policy of Congress to:

> ...recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce ard eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this Act. It is further the policy of Congress to support and aid research relating to the prevention, reduction, and elimination of pollution, and to provide Federal technical services and financial aid to State and interstate agencies and municipalities in connection with the prevention, reduction, and elimination of pollution (Ibid).
>
> It is further the policy of Congress that the President, acting through the Secretary of State and such national and international organizations as he determines appropriate, shall take such action as may be necessary to insure that to the fullest extent possible all foreign countries shall take meaningful action for the prevention, reduction, and elimination of pollution in their waters and in international waters and for the achievement of goals regarding the elimination of discharge of pollutants and the improvement of water quality to at least the same extent as the United States does under its laws (Ibid., Sec. 101(c)).
>
> Public participation in the development, revision, and enforcement of any regulation, standard, effluent, limitation, plan, or program established by the Administrator or any State under this Act shall be provided for, encouraged, and assisted by the Administrator and the States. The Administrator, in cooperation with the States, shall develop and publish regulations specifying minimum guidelines for public participation in such processes (Ibid., Sec. 101(e)).

The crux of the Act is the declaration of Section 301(a) forbidding the discharge of any pollutant by any person into the waters of the United States including the territorial sea except as provided by the Act. In the past, there has been considerable discussion and controversy over which waters federal legislation had jurisdiction. Usual reference has been to "navigable waters" and "interstate waters," concepts with varying interpretations to differentiate between state and federal jurisdiction. EPA interprets Congress' omission of "navigable" from the "waters of the United States" as extending federal jurisdiction to cases in which the interstate commerce is connected to the use of the water and not through the water itself (Dolgin, 1974, p. 691). The intent is to avoid the dichotomy of state and federal waters and bring all significant waters under a single system "with the state and federal governments playing complementary functions in the operation of a single system" (Ibid., p. 693). Thus, from a practical point of view, the federal-state relationship in controlling water pollution extends to nearly all waters of the United States.

In controlling discharges of pollutants, the Act prohibits any discharge unless the discharger meets uniform effluent standards. Two levels of effluent standards are to be met by point source dischargers, unless discharging into a publicly owned treatment plant. The first requires the adoption of the best practicable control technology currently available by July 1, 1977. The second calls for effluent limitations which require application of the best available technology economically achievable by July 1, 1983 (P.L. 92-500, Sec. 301(b)).[4]

The efforts of the sponsoring Congressmen and both House and Senate committees were devoted to producing a powerful, decisive piece of legislation which would drastically reduce pollution of our nation's waters. But the scope of section 301(a) as it applied to irrigation return flows was questioned. During debate in the House of Representatives on its version of the bill, H.R. 11896, Teno Roncalio, Representative from Wyoming, offered an amendment exempting irrigated agriculture from the requirements of section 301 (A Legislative History, 1972, p. 651). He argued that this amendment was important to the credibility of the legislation, since the technology for identifying and specifically tracing irrigation pollutants did not exist and therefore the bill would be unenforceable in the case of agriculture. Comment was expressed in favor of the amendment until the representative from California called attention to the San Luis Drain which dumps highly polluted irrigation return flows into the San Joaquin River in California. That single case seemed to sway the opinion, in spite of the thousands of agricultural users whose impact would be much less significant, and the amendment was defeated (Ibid., pp. 652-653).

The objective and goals are to be achieved through the integrated effort of a three-pronged program encompassing: a) areawide waste treatment management for both point source and non-point source discharges; b) a continuing planning process; and c) a permit system for discharges from point sources in navigable waters under Section 402 called the National Pollutant Discharge Elimination System (NPDES). The construction grants program was also increased significantly to enable municipalities, states and interstate agencies to maintain treatment facilities that would meet the objectives of the Act.

---

[4] See Goldfarb, William, "Better Than Best: A Crosscurrent in the Federal Water Pollution Control Act Amendments of 1972." Land and Water Law Review, Volume XI, No. 1, 1976.

Areawide Waste Treatment Management--

Section 208(a) required the Administrator to publish guidelines no later than January 16, 1973 for identifying areas that have substantial water quality problems (P.L. 92-500, Sec. 208(a)). The Governors of the various states then had sixty days to identify the problem areas in their states. Within 120 days, boundaries and a single agency capable of developing areawide waste treatment management plans had to be designated. One year after the designation of an agency it must have in operation an areawide planning process (Ibid., Sec. 208(b)(1)). This initial plan has to be submitted to the Administrator not later than two years after the planning process is in operation. These plans have to include a process to identify agriculturally related non-point sources of pollution (Ibid., Sec. 208(b)(2)F).

Guidelines for management of areawide waste treatment under Section 208 were prepared by the Environmental Protection Agency in 1975. Administrator Train stated in a foreword to these guidelines that "complex technical and institutional problems of water quality protection vary so widely across the nation that long-term solutions to these problems will necessarily depend on decentralized management" (Environment Reporter, Current Developments, Sept. 5, 1975, Vol. 6, No. 19, p. 761). The guidelines described the overall factors which should be taken into account and provided a framework for designated 208 planning agencies to use in developing their plans and implementation programs. They recommend that Section 208 programs focus on an integrated approach to identify and control the most serious water pollution problems. A successful Section 208 program should include among other things a non-point source management program and regulatory programs including discharge permits to carry out abatement measures. The Environmental Protection Agency has also urged that areawide wastewater treatment management should focus on non-point source pollution problems including those occurring from irrigated agriculture (Environment Reporter, Current Developments, April 23, 1976, Vol. 6, No. 52, p. 2145).

Continuing Planning Process-

Section 303(3) requires each state to have a continuing planning process for navigable waters, approved by the Administrator, before a state permit program can be implemented. The planning process must include:

1. effluent limitations at least as strict as those required by Sec. 301(b), 306 and 307 and the requirement for water quality standards;
2. an areawide waste management and basin plan under Sec. 208 and 209.
3. total maximum daily loads for pollutants;
4. procedures for revision;
5. adequate authority for intergovernmental cooperation;
6. adequate implementation to meet water quality standards;
7. control over wastewater treatment residuals; and
8. an inventory of the needs for waste treatment works in order of priority (P.L. 92-500, Sec. 303(e)).

The continuing planning process is a "key mechanism for integrating the various management activities" of the Federal Water Pollution Control Act.

After the basic planning has been accomplished under Section 303(e), other planning is to be used to develop more sophisticated and explicit management guidance (Environment Reporter, Current Developments, January 31, 1975, Vol. 5, No. 40, p. 1515). Interim regulations were established by EPA on March 27, 1973 for a state's continuing planning process in water pollution control (Environment Reporter, Current Developments, March 30, 1973, Vol. 3, No. 48, p. 1441). Final regulations became effective on July 3, 1974 (Environment Reporter, Current Developments, July 7, 1974, Vol. 5, No. 6, p. 165).

National Pollutant Discharge Elimination System Permit Program and Irrigated Agriculture--

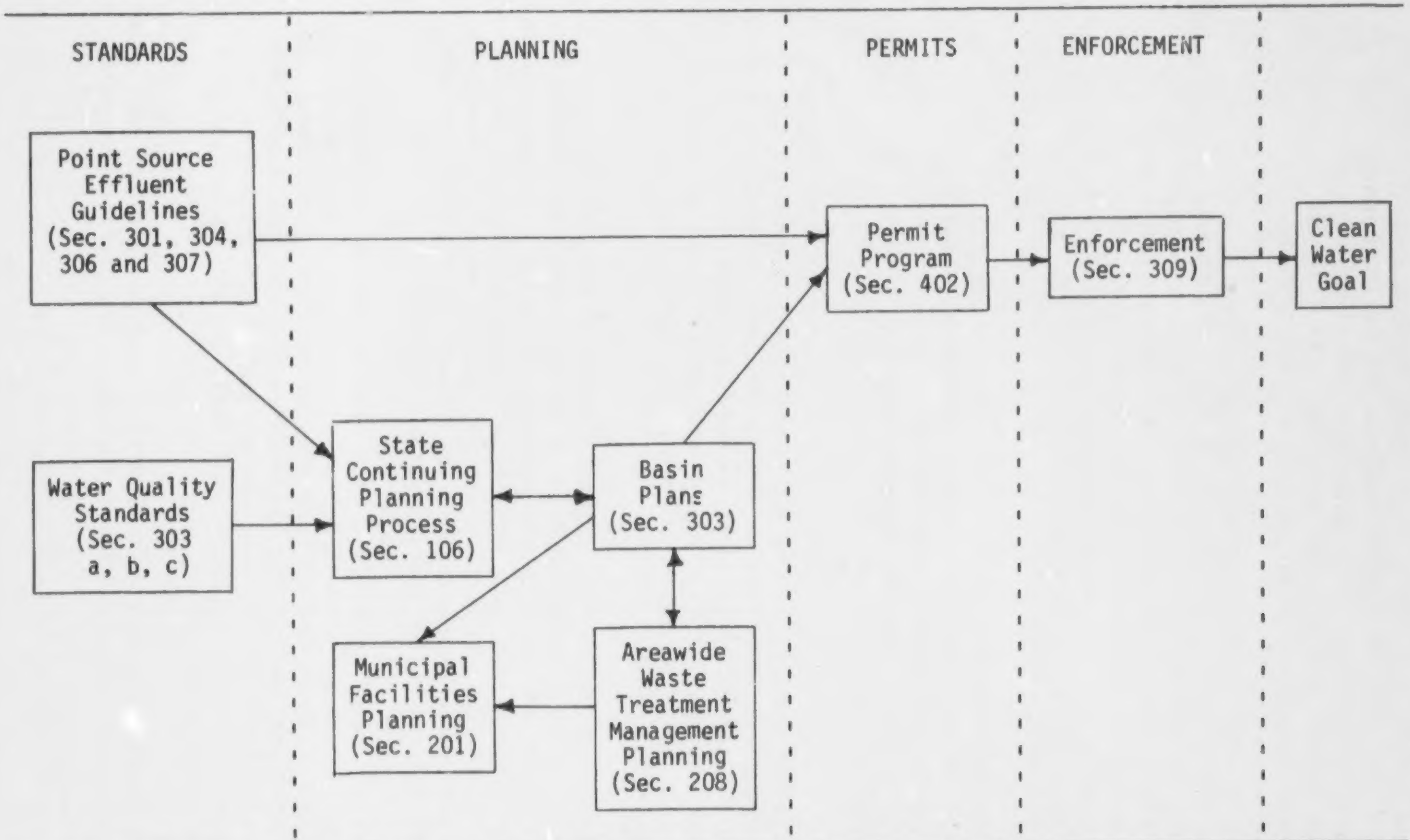
The basic legal mechanism for enforcing the water quality and effluent limitation standards is the permit program created by Section 402 of P.L. 92-500. It must be emphasized that although the effluent standards set the maximum discharge from a source, the retention of the water quality standards provides a dual approach to achieving cleaner water under P.L. 92-500. Even though a discharger is complying with the effluent controls under his permit, he may be required to reduce further the effluent if it is necessary to meet the water quality standards set for the receiving waters (see Figure 14 for a graphic illustration of the relationship of Section 402 with other actions under P.L. 92-500).

Section 402 provides for a permit system and all permits presently in force under the 1899 Rivers and Harbors Act continue until modified.[5] As summarized by the Staff Report to the National Commission on Water Quality:

> The NPDES permit process contains 10 distinct steps... beginning with a discharger request for a permit application and ending with issuance of the permit. After a discharger files a permit application, it is reviewed by EPA or an NPDES state agency for completeness. During this review step, EPA solicits comments from a wide range of interested parties, including the Corps of Engineers and state and Federal water resource agencies. While such comments are generally advisory, in effect the Corps of Engineers can veto a permit when it concludes that the permit will damage navigation. Though not legally obligated to meet the review objections raised by agencies other than the Corps, negative comments are carefully considered by EPA which has established procedures for resolving interagency conflicts.
>
> After review of the permit application, EPA (or an NPDES state agency) formulates permitted effluent limitations. If the discharger is unable to comply fully with permitted limitations within nine months of permit issuance, the two parties jointly formulate a compliance schedule for installation of the required pollution control plant and equipment. Some degree of permit formulation variation is apparent in every state and EPA regional permit

---

[5] However, no new permits are to be issued under that Act.


STANDARDS
PLANNING
PERMITS
ENFORCEMENT
Point Source Effluent Guidelines (Sec. 301, 304, 306 and 307)
Water Quality Standards (Sec. 303 a, b, c)
State Continuing Planning Process (Sec. 106)
Basin Plans (Sec. 303)
Municipal Facilities Planning (Sec. 201)
Areawide Waste Treatment Management Planning (Sec. 208)
Permit Program (Sec. 402)
Enforcement (Sec. 309)
Clean Water Goal

SOURCE: National Water Quality Commission Report, FWPCA of 1972: Institutional Assessment--The Permit Program, NTIS, PB 244805, p. 6, 1975.

Figure 14. Theoretical Relationship of Section 402 with Other Regulations.

> writing process. Decisions regarding when to involve dischargers, how much data should be collected, by whom (the permittee, EPA, or an NPDES state), and how load allocations are to be determined when water quality limited river segments or water basins are involved represent only a few of the discretionary subjects in the permit writing process.
>
> The fifth step in the permit writing process relates to Federal-state certification (approval) of the draft (formulated) permit. If the permit is prepared prior to designation of the NPDES program to the state, the EPA prepared permit must be certified-approved by the state water pollution control agency. If the state has been designated, the NPDES state prepared permit must be certified-approved by the EPA Regional Administrator.
>
> After certification-approval of the draft permit, public notice is given of the intent to issue a permit; at least a 30-day public comment period must follow such notice and when requested, a public hearing must be conducted if a significant public interest issue (as determined by the EPA Regional Administrator) is involved.
>
> Following public notice, review of any comments and a public hearing when required, the final permit is drafted. Final Federal-state certification-approval is obtained, and the permit is issued unless the discharger-applicant resorts to administrative or judicial appeal of the permit conditions (Water Quality, 1976, V-20 to V-23).

States are encouraged to adopt a pollution control program consistent with the federal provisions. Once accepted by the Environmental Protection Agency, the states shall administer water quality control within their jurisdiction. The Administrator will turn the NPDES program over to the states subject to Section 304(h)(2) and Section 402(b), unless the state permit program fails to meet federal requirements (Sec. 402(b)). Table 2 reflects the states of NPDES delegation in the 17 western states.

Through the permit program, point source discharges will be identified and their discharges monitored to ensure that the effluent discharge limitations are maintained. The permit defines the obligations of the permittee in complying with effluent limitations tailored to the specific conditions of the permittee. Also, the permit sets out a compliance schedule to be followed by the permit holder. Figure 15 and Table 3 identify the scope of coverage under the NPDES program.[6]

As was stated previously, all point source discharges not excluded under Section 301 are subject to the permit program. By not excluding irrigated

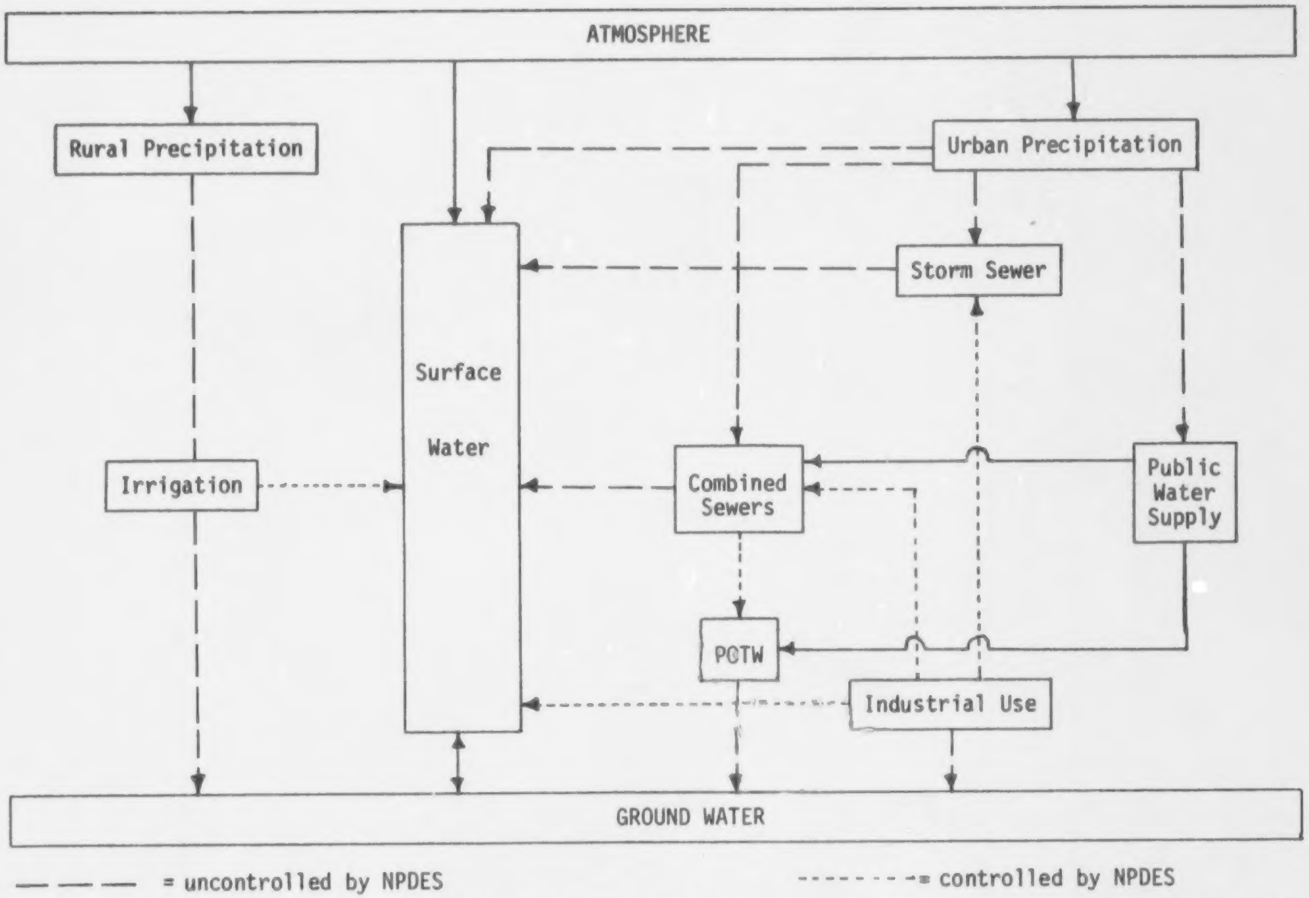
---

[6] For a detailed discussion on the coverage of Section 402, see The Federal Water Pollution Control Act of 1972: Institutional Assessment--The Permit Program, A National Water Quality Commission Report, NTIS, PB 244 805, 1975.

TABLE 2. STATUS OF NPDES DELEGATION IN THE 17 WESTERN STATES*

EPA Regions	Accepted	Reason for EPA Non-Acceptance
Region VI		
New Mexico		Legal
Oklahoma		Legal
Texas		Legal
Region VII		
Kansas	6-28-74	
Nebraska	6-12-74	
Region VIII		
Colorado	3-27-75	
Montana	6-10-74	
North Dakota	6-13-75	
South Dakota		Resources
Utah		Legal
Wyoming	1-30-75	
Region IX		
Arizona		Legal
California	5-14-73	
Nevada	9-19-75	
Region X		
Idaho		Legal
Oregon	9-26-73	
Washington	11-14-73	

* Status as of February 1, 1977. Update to Table V-5, p. V-21, Staff Report to the National Commission on Water Quality, April 1976.



Source: National Water Quality Commission Report, FWPCA of 1972: Institutional Assessment--The Permit Program, NTIS, PB 244805, p. 102, 1975.

Figure 15. Overview of NPDES Coverage

TABLE 3. COVERAGE OF POLLUTION SOURCES

Direct Coverage by P.L. 92-500			Exclusions	
Direct Coverage by NPDES	Controlled by Other Public Law 92-500 Programs	Indirect Coverage by NPDES	Dischargers Excluded from[1] NPDES Coverage[2]	Uncontrolled by[1] P.L. 92-500 [2]
--Industrial dischargers	--Ocean dumping (Sec. 402)	--Combined sewers	--Storm sewer	--Urban runoff
--Municipal treatment plants	--Marine sanitation dischargers (Sec. 312)	--Industrial treatment (Sec. 307)	--Small feedlots	--Rural runoff
			--Small pretreating industries	--Ground water pollutants
--Irrigation return flows	--Aquaculture (Sec. 318)	--Sludge disposal		--Non-Federally funded land application projects
--Large feedlots	--Oil and hazardous materials (Sec. 311)		--Landfill or other solid wastes disposal systems	--Acid mine drainage
	--Dredging spoils (Sec. 404)		--Septic tanks, cesspools and individual household systems	
	--Toxic substances (Sec. 307)			

[1] Section 208 provides for planning to examine and management to control the impacts of these pollutants in some localized areas facing complex water quality problems.

[2] State permit programs control some of these sources.

SOURCE: National Water Quality Commission Report, FWPCA of 1972: Institutional Assessment--The Permit Program, NTIS, PB 244805, p. 104, 1975.

agriculture from the provisions of Section 301, it became subject to the permit program. The ramifications of the failure to pass the Roncalio amendment were outlined by the Congressman:

> I believe that a serious, if not fatal, omission of H.R. 11896 is its failure to specifically exempt irrigated agriculture from the federal discharge permit system until adequate technology is developed to meet proper requirements. My concern is with Sections 208(b)(2)(F), 304(3), 306(b)(1)(B) and particularly Section 301 which states that unless otherwise authorized, 'the discharge of any pollutant by any person shall be unlawful.'
>
> Accordingly, I shall at the proper time encourage an amendment to Section 302 to the effect that:
>
> > The provisions of this Act prohibiting the discharge of pollutants and requiring a permit to discharge shall not be applicable to discharges resulting from agricultural irrigation. The purpose of this exclusion is to permit the development of an adequate technology and feasible methodology which will enable irrigation dischargers to meet the discharge and permit requirements of this Act.
>
> I think it is common knowledge that the type of salinity problems created by irrigation wastes--even in the arid upper Colorado states which may well contribute to the overall salinity problems 1500 miles to the southwest--are simply not as alarming as the more common pollutants discharged by industrial and municipal facilities. Substantial salinity concentrations have little effect on recreational use of water or its suitability for propagation of fish.
>
> Moreover, the technology to control salinity resulting from irrigation use is not available. There is no feasible method of treating irrigation wastes in those cases when irrigation discharges can be isolated from natural sources of runoff. Usually it is impossible to locate a particular discharge and match it to the proper irrigator before it percolates into a ground water reservoir, or returns to the original stream.
>
> The most insurmountable difficulties encountered, however, could be the administrative problems. The number of federal applications for all irrigation discharges would be staggering. In Wyoming alone, between 35,000 and 40,000 permits would be required. When applying for a federal discharge permit the burden of proof would be on the water user to show that the environment would not be harmed. For those who were not granted a permit, valuable property rights would be lost without compensation, and this involves serious implications for the courts.

> Moreover, the massive bureaucracy needed to process the permit applications would have uncertain jurisdiction. Would it have to completely supercede functioning state water right mechanisms in order to operate effectively? If so, the prior appropriation doctrine would be reduced to an unrecognizable shambles. This could cause disastrous instability throughout the West among current water right holders. The effect on investment incentives and property values is incalculable. At best, a phenomenal paper work logjam could be created with negligible improvement in water quality.
>
> Even though effluent control may be chosen as the best method of controlling pollution contributed by industrial and municipal wastes, it does not appear at present to be a practical method of controlling non-point sources of salinity associated with irrigation. A better method of handling these problems may well be regional or basinwide management of water resources. I believe the above amendment therefore would serve the best interests of improving the overall water quality throughout the nation, without imposing regulations that are necessary in one area, but will do irreparable harm in another (A Legislative History, 1972, pp. 860-861).

The fact that the San Luis Drain case so closely resembles the point source kind of pollution with which legislators from most parts of the nation are familiar, may account for its powerful influence in their vote against Roncalio's amendment. Their inability to accept the issues raised above seems to be a case of "straining at a gnat and swallowing a camel."

In Senate debate, Mr. Dole, Senator from Kansas, pointed out the fact that agricultural pollution is generally a non-point source. An exchange between Senator Dole and Senator Muskie, one of the primary sponsors of the bill, is informative:

> Mr. Dole: Another question of real concern to many farmers, stockmen and others in agriculture involves the terms 'point source' and 'non-point source.'
>
> Most sources of agricultural pollution are generally considered to be non-point sources.
>
> My question is: Simply, to what sources of guidance are we to look for further clarification of the terms 'point source' and 'non-point source'--especially as related to agriculture?
>
> Mr. Muskie: Guidance with respect to the identification of 'point sources' and 'non-point sources,' especially as related to agriculture, will be provided in regulations and guidelines of the Administrator (Ibid., pp. 1298-1299).

This indicates that it would be EPA's responsibility to clarify the terms "point" and "non-point" source and thereby to determine applicability of

Section 402 permit requirements.[7] Thus, the legislature defeated the proposal to exclude agricultural pollution and passed the problem on to the Administrator of EPA.

Implementing the NPDES Program--

On December 22, 1972, regulations were promulgated and published in the Federal Register establishing Guidelines for State Program Elements Necessary for Participation in the National Pollution Discharge Elimination System (NPDES) program (37 F.R. 28290). Comments received in response to these regulations and to proposed NPDES application forms indicated a need to consider the desirability of attempting to extend the permit system to all point sources conceivably covered by the broad definitional framework established by the Federal Water Pollution Control Act. EPA's intent to consider: 1) further comments with respect to the NPDES application form for agricultural discharges, Short Form B; and 2) exclusions from the permit system, particularly for agricultural and silvicultural sources, was indicated in the Federal Register on December 29, 1972 (37 F.R. 28765).

On May 3, 1973, EPA proposed a revised Short Form B for agricultural discharges and proposed classes and categories of silvicultural and agricultural activities which would not be subject to NPDES permit requirements (38 F.R. 10960). On May 22, 1973, regulations establishing policies and procedures for issuance of NPDES permits by the Federal Government were promulgated and published (38 F.R. 13528). In that publication, Section 125.4, entitled Exclusions, provided that NPDES permits were not required for discharges from separate storm sewers composed entirely of storm runoff uncontaminated by industrial or commercial activity.

Subsequently, on July 5, 1973, after receiving information, statistics and advice from other federal agencies, state officials and agricultural and environmental groups in response to the May 3, 1973 proposal, EPA issued notice of the availability of the final agricultural application Short Form B and published an amendment to Section 125.4 (38 F.R. 18000). This amendment provided for an expansion of the exclusions in that section, eliminating categories of small concentrated animal feeding operations and certain agricultural and silvicultural activities from the permit requirement. Specifically, irrigation return flow from sources of less than 3,000 acres was exempted. The EPA Regional Administrator or the Director of a state water pollution control agency could override the exclusions by identifying individual sources as significant contributors of pollution. Once so identified, significant contributors of pollution were required to apply for and comply with NPDES permits (40 C.F.R. 124.11(h)(5)).

In promulgating the July 5 regulations, EPA stated its belief that while some point sources within the excluded categories may be significant contributors of pollution which should be regulated consistent with the purposes of the FWPCA, it would be administratively difficult if not impossible, given federal and state resource levels, to issue individual permits to all such point sources. In addition, the Agency stated that regulation through the use of site-specific NPDES permits was not appropriate for most of the small sources covered by the exemptions. Essentially, these regulations providing for exemptions were based upon EPA's view (a view which it continues to maintain is correct) that most sources within the exempted categories present runoff-related problems not susceptible to the conventional NPDES permit program, including effluent limitations. EPA's position was and continues to be that most rainfall is more properly regulated under Section 208, whether or not the rainfall happens to collect before flowing into navigable waters. Agricultural runoff frequently flows into ditches or is collected in pipes before discharging to a stream, and that most of these sources are non-point in nature and should not be covered by the NPDES permit program. EPA felt that this was an exercise of limited administrative discretion in excluding these basically non-point sources from the permit program and the best means for achieving the Congressional intent consistent with the language of P.L. 92-500.

---

[7] EPA is currently appealing the Flannery Decision (N.R.D.C. v. Train, 396 F. Supp. 1393, 7 ERC 1881, D.D.C., 1975) to contest the inclusion of "all" point sources under the NPDES program.

On July 16, 1975, EPA approved revisions to the NPDES Regulations which made the discharger responsible for removing only those pollutants he adds to the waters of the United States, by receiving credit for the specific pollutants which are present in his intake water and are not removed through the application of the required level of technology (40 F.R., 29848; see Environment Reporter, Current Developments, July 18, 1975, Vol. 6, No. 12, p. 488). These regulations became effective on August 15, 1975.

Reaction to the NPDES regulations including irrigation return flows was swift. Farmers with more than 3,000 acres of land objected to the regulations. In Idaho, where EPA in cooperation with the state agency attempted to administer a permit program, farmers joined together to fight the system in court. They argued that the 3,000 acre limitation was only arbitrarily chosen without direct relationship to pollution contribution. Officials in the Department of Ecology in the State of Washington watched Idaho's experience and decided to implement a much less objectionable program of issuing permits on wastewater only (excess water which had not been applied to the fields, but was diverted back into the waterway).

Another attack on the regulations issued by EPA came from the environmental front. The Natural Resources Defense Council (NRDC) challenged the exercise of the Administrator's discretion in exempting certain sources of pollution from the NPDES permit program. In a law suit filed in the Federal District Court for the District of Columbia, NRDC contended that the Administrator had failed to meet the legislatively implied obligation to delineate, by regulation or otherwise, between point and non-point sources and had instead simply exempted portions of what remained classified as point sources. The very inclusion of some sources of irrigation return flow (areas over 3,000 acres) in the NPDES program is taken to be an implied classification of these sources as point sources.

Defendant Train and EPA contended that the exempted categories of sources are ones which fall within the definition of point source but which are ill-suited for inclusion in a permit program. Pollutants, EPA maintained, are best eliminated from agricultural discharges by "process changes" which prevent pollutants from entering runoff rather than by treating the discharge by the "end-of-pipe" method. EPA argued that the Act and its legislative history reflect congressional recognition that such runoff is to be dealt with in a non-point method. Moreover, it was EPA's contention that the tremendous number of sources within the exempted categories would make the permit program unworkable. Faced with this problem, the Administrator harmonized the conflicting demands for regulation of point sources by exercising his discretion under the permit program to establish the challenged exemptions (see 7 E.R.C. 1881, 396 F. Suppl. 1393, D.D.C., 1975).

The District Court rules in favor of N.R.D.C. and on June 10, 1975 issued a final order requiring EPA to propose and promulgate regulations "extending the NPDES permit system to include all point sources" in the concentrated animal feeding operation, separate storm sewer, agricultural and silvicultural categories. Under the terms of the order, EPA was to propose regulations extending the permit system to point source discharges in the agriculture and silviculture categories by February 10, 1976. EPA has appealed this decision and its resolution is still pending.

As part of the effort to carry out the requirements of the court order, EPA solicited and received information, statistics and advice from other Federal agencies, state and local officials, trade associations, agricultural, silvicultural and environmental groups, and interested members of the public. Public meetings were held across the country; those in Denver, Portland (Oregon), Indianapolis, and Atlanta specifically considered the agriculture and silviculture categories. At each of these meetings, persons representing both potential permittees and permit issuing agencies voiced significant opposition to the development of an expanded permit system with the NPDES program as it has been administered to date. Many commenters pointed out that such a program would require a massive commitment of resources, both by the dischargers and by the issuing agencies, which would not be commensurate with the modest pollution reduction gained from the program. They also emphasized that numerical effluent limitations are inappropriate for pollution abatement from most of these point sources, and they urged EPA to consider alternative pollution control processes and methods as a basis for any proposed permit system. Finally, several commenters strongly recommended that EPA reconsider the explicit legislative history of P.L. 92-500 concerning agricultural non-point sources and adapt the proposed regulations to the language from that history. In general, most participants strongly recommended that EPA develop factors to distinguish point sources from non-point sources, and suggested specific criteria to designate most discharges from agricultural activities as non-point in nature and thus not subject to the permit program.

Taking these comments, as well as the legislative history, the statutory language, the N.R.D.C. vs. Train decision, and the technical data available on agricultural activities into consideration, EPA examined the relationship between the NPDES permit program (which is designed to control and eliminate discharges of pollutants from discrete point sources) and water pollution from agricultural activities. On February 23, 1976, EPA proposed a new program for dealing with agricultural activities.

The proposed new approach provides that water pollution from most agricultural activities is considered non-point in nature and thus not subject to any permit requirements. However, discharges of pollutants into navigable waters through discrete conveyances, which result from the controlled application of water, are considered agricultural activity point sources. A new section, 124.84, would be added to the regulations to set forth the distinction between point and non-point sources.

Agricultural activities, particularly irrigation, which result in surface discharges:

1. which contain pollutants; and
2. which result from the controlled application of water by any person, and which are not caused or initiated solely by natural processes of precipitation; and
3. which are discharged from a discernible, confined and discrete conveyance; and
4. which are directly discharged into navigable waters; are subject to regulation under Section 402, the NPDES permit program (41 F.R. 7964).

It is clear that this definition would apply primarily to irrigation return flow ditches and drains. Although these ditches are considered point sources, in most cases there are no conventional permit requirements at this time. Because of the lack of pollution control technology, discharges of agricultural wastes from agricultural activity point sources are proposed to be permitted by general permit(s).

On July 12, 1976, the EPA issued regulations which subjected agricultural activities to general rather than individual water pollution control permits (40 C.F.R. 124, 41 F.R. 28493). A point source is defined in the agricultural category by these regulations as any discernible, confined and discrete conveyance from which any irrigation return flow is discharged into navigable waters (41 F.R. 28496, Sec. 125.53). Irrigation return flow is defined as "surface water, other than navigable waters, containing pollutants which result from the controlled application of water by any person to land used primarily for crops, forage growth, or nursery operations" (41 F.R. 28496, Sec. 125.53). These regulations recognized that water pollution from most agricultural activities is considered non-point in nature and thus not subject to any permit requirements.

Regulations for general permits covering point sources from agricultural activities have been proposed by the EPA because "the NPDES permit program as currently administered was not appropriate to deal with the vast number of point sources" in that category (Anderson, 1976, p. 2). This general permit program is being proposed, according to EPA, because of:

1. The number of discharge sources in the separate storm sewer and agricultural activity categories that have been designated

> as point sources subject to permit requirements is vast, and in many cases unknown or unnumerable.
>
> 2. The individual owners and operators of such point sources are not easily ascertainable, nor is their responsibility for the effluent discharged from such point sources entirely clear....
>
> 3. [the fact that] even if this information concerning the number and identification of all owners and operators and their legal responsibilities was available, it is unappropriate at this time to attempt to impose effluent limitations on each point source... (Ibid., 1976, p. 3).

Final regulations for the general permit program were proposed on February 4, 1977. In describing the program, the EPA regulations state:

> NPDES States may choose to administer a similar general permit program for the point sources in these two categories, or may apply the conventional individual permit program to separate storm sewers and agricultural point sources.
>
> This general permit program is intended to provide maximum flexibility to EPA and the States in administering an appropriate permit program for these categories. This program specifically recognizes that pollution reduction from sources in these categories is often more effectively achieved by using best management practices (BMPs) than by applying end-of-pipe pollution control technology. BMPs are management techniques that reduce the amount of pollutants at their source rather than remove them from their point of discharge into navigable waters. The Federal Water Pollution Control Act (FWPCA), however, contemplated that NPDES permits would generally regulate pollution from point sources by imposing effluent limitations achieved by end-of-pipe pollution control technology. It appears that under the FWPCA, BMPs to achieve pollution reduction and water quality standards can be imposed as requirements in NPDES permits only in limited, specified circumstances. Clearly, however, BMP requirements may be imposed in permits so as not to conflict with provisions of an area-wide waste management plan approved pursuant to section 208. Moreover, BMPs may be imposed by requirements of State certification of an EPA-issued permit under section 401. Despite the flexibility offered by sections 208 and 401, however, BMPs are generally not available as control mechanisms in NPDES permits at this time, although they are often the most effective means of achieving pollution control for discharges from separate storm sewers and agricultural point sources....
>
> Given the variable nature of pollutant discharges from separate storm sewers and agricultural point sources, and the inability to impose nationally applicable substantive

> restrictions in second generation general permits or in individual permits, which could include conventional effluent limitations, management practices, or other appropriate requirements.
>
> Because of the interrelationship between this general permit program and the 208 planning program, the importance of comprehensive, sound and effective 208 plans cannot be overemphasized.... While it is the express policy of EPA to regard planning and problem-solving under section 208 as a local government function, if it appears that this function is not being carried out, EPA must initiate action to meet the goals of the FWPCA. An alternative to this general permit program, with its reliance on planning agencies' BMP recommendations, could be the issuance of individual NPDES permits imposing effluent limitations on the point sources identified in the agricultural activities and separate storm sewer categories. This alternative, as it has often been expressed, is not as environmentally or administratively sound as the general permit concept incorporating BMPs... (42 F.R. 6846, Environment Reporter, Current Development, Vol. 7, No. 41, p. 1568-1569).

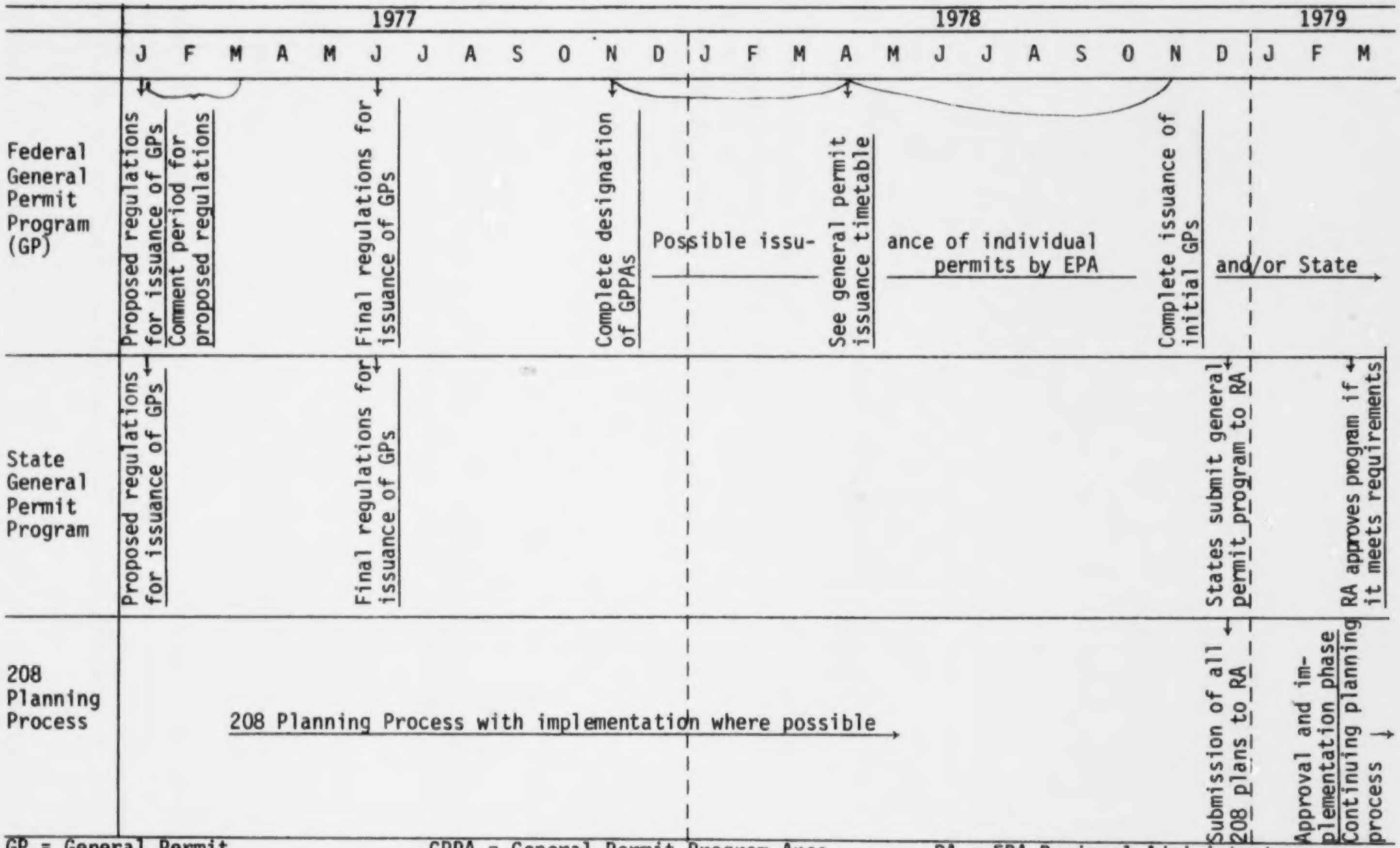
The general permit program will be implemented in two phases. The first phase requires permit issuing agencies to designate general permit program areas (GPPAs) in the state within six months from the date of the regulation. In designating GPPAs for agricultural point sources, the boundaries may conform to existing political boundaries such as conservation, irrigation, or reclamation districts, designated planning areas under section 208 on city, county or state political boundaries, or they may correspond to river basins or any other appropriate subdivision.

The second phase will require general permits to be issued in each GPPA to cover owners and operators of point sources which have been identified pursuant to the July 12, 1976 regulations for agricultural activities within one year after the area has been designated as a GPPA. Figures 16 and 17 show the proposed timetable for implementation of the general permit.

General permits cover all owners and operators of separate storm sewers and agricultural point sources in the GPPA unless they are already subject to the regular NPDES permit or submit in writing a request to be excluded from the general permit. In the latter case, they must apply for and obtain an individual NPDES permit if discharging from a point source. All covered by the permit are considered permittees.

The permits may be issued for fixed terms not to exceed five years and may be reissued for like additional terms. General permits can be modified, suspended, or terminated; and in the case of termination for some or all owners or operators in the GPPA, those affected may be required to obtain an individual permit.

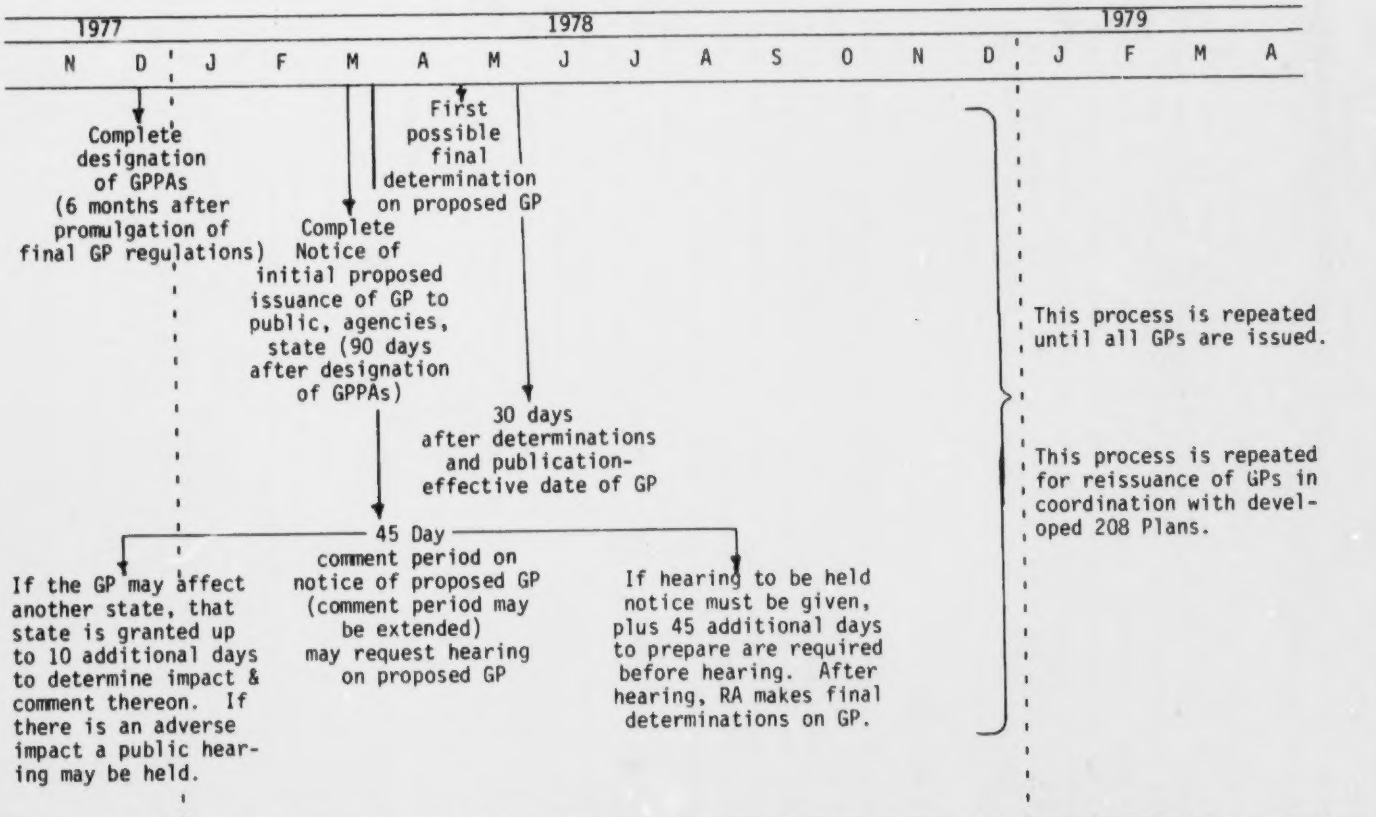
The proposed regulations for implementing the general permit program are scheduled for promulgation in mid-1977, after comments have been made and



GP = General Permit GPPA = General Permit Program Area RA = EPA Regional Administrator

SOURCE: Proposed NPDES General Permit Regulations. Chart B, 42 F.R. 6846; E.R., CO Vol. 7, #41, p. 150.

Figure 16. Proposed Timetable


1977
1978
1979
N
D
J
F
M
A
M
J
J
A
S
O
N
D
J
F
M
A
Complete designation of GPPAs (6 months after promulgation of final GP regulations)
Complete Notice of initial proposed issuance of GP to public, agencies, state (90 days after designation of GPPAs)
First possible final determination on proposed GP
30 days after determinations and publication-effective date of GP
45 Day comment period on notice of proposed GP (comment period may be extended) may request hearing on proposed GP
If the GP may affect another state, that state is granted up to 10 additional days to determine impact & comment thereon. If there is an adverse impact a public hearing may be held.
If hearing to be held notice must be given, plus 45 additional days to prepare are required before hearing. After hearing, RA makes final determinations on GP.
This process is repeated until all GPs are issued.
This process is repeated for reissuance of GPs in coordination with developed 208 Plans.

(This chart shows the proposed procedure for the issuance of general permits by the U.S. EPA only. State programs for the issuance of general permits may differ from this timetable.)

GP = General Permit

GPPA = General Permit Program Area

RA = EPA Regional Administrator

SOURCE: Proposed NPDES Permit Regulations. Chart A, 42 F.R.: E.R., CO, Vol. 7, # 41, p. 150.

Figure 17. Proposed Permit Issuance Timetable

incorporated. Until such time, however, there is no federal program for control of irrigation return flow other than inclusion under the individual (regular) NPDES program where an owner or operator is specifically discharging and causing objectionable degradation to water quality.

In addition to including irrigation return flow under Section 301 for effluent control, water quality criteria have also been drafted by the EPA for agriculture under Section 304. Specific pH values were not prescribed due to the effects of acidity and alkalinity in irrigation waters on soils and plant growth which are indirect. However, EPA has stated that a range of 4.5 to 9.0 is usable for irrigation if care is taken to detect development of adverse indirect effects (Environment Reporter, Current Developments, August 17, 1973, Vol. 4, No. 16, p. 663). EPA has also recognized that it is impossible to prescribe a specific limitation for biochemical oxygen demand in irrigation water due to a lack of data.

Colorado Salinity Control Act

The Federal Government umbrella program for achieving cleaner water has been described above. In addition, however, is specific legislation to remedy international as well as national pollution problems stemming from irrigation return flow and natural pollution. On June 24, 1974 a bill "to authorize the construction, operation and maintenance of action in the Colorado River Basin to control the salinity of water delivered to users in the United States and Mexico" was signed by President Nixon and became law (Act of June 24, 1974, P.L. 93-320, 88 Stat. 266, 43 U.S.C.A., Sec. 1571, et. seq.). This Act adopts and sets out a process to implement a salinity control policy for the Colorado River. The Act carries out the agreements of Minute 242 of the International Boundary and Water Commission (Aug. 30, 1973) on a permanent and definitive solution to the international problem of salinity in the Colorado River. The policy is based upon recommendations of the Reconvened Seventh Session of the Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries in the States of California, Colorado, Utah, Arizona, Nevada, New Mexico, and Wyoming held in Denver, Colorado, on April 26-27, 1972 (43 U.S.C.A., Sec. 1591(a), and published in the Conference Proceedings--Proceedings: 7th Session Reconvened, pp. 169-177, April 1972).

Programs to correct the problem downstream from Imperial Dam include a desalting plant to reduce the saline waters from the Wellton-Mohawk division of the Gila Project, Arizona, construction or replacement of by-pass drains and conveyance flumes, and retiring of lands to reduce the irrigation return flows. In addition to removing some lands from production, assistance to remaining lands to increase irrigation efficiency resulting in degraded return flows is to be offered (43 U.S.C.A., Sec. 1571), and a complex well field will be installed to provide water supplies for use in the United States or to satisfy the 1944 Mexican Water Treaty (43 U.S.C.A., Sec. 1573).

In carrying out the policy of the enforcement conference, the Act directs the Secretary of the Interior to expedite the investigation, planning and implementation of the salinity control program in Chapter VI of the "Colorado River Quality Improvement Program, February 1972" (43 U.S.C.A., Sec. 1591(b)). Further, the Secretary is authorized to construct, operate and maintain salinity control units as the initial stage of the Colorado River Basin salinity control program upstream from Imperial Dam (43 U.S.C.A., Sec. 1592).

This act also created the Colorado River Basin Salinity Control Advisory Council to:

> (1) act as liaison between both the Secretaries of Interior and Agriculture and the Administrator of the Environmental Protection Agency and the States in accomplishing the purposes of this subchapter;
> (2) receive reports from the Secretary on the progress of the salinity control program and review and comment on said reports; and
> (3) recommend to both the Secretary and the Administrator of the Environmental Protection Agency appropriate studies of further projects, techniques, or methods for accomplishing the purposes of this subchapter (43 U.S.C.A., Sec. 1594).

RESULTS FROM RECENT GOVERNMENTAL INVESTIGATIONS

Numerous water resources investigations ordered by Congress have taken place since the early 1900's, but primarily since 1960, water quality has gradually developed into a topic unto itself. This brief review covers some of the issues raised and examined by various recent investigations. It is by no means complete and is directed to the irrigation return flow quality problem. Quotations are used extensively not to lose the flavor of the problem at the time of the report.

Senate Select Committee on National Water Resources

On April 30, 1954, the Senate Select Committee on National Water Resources was formed following adoption of Senate Resolution 48, to examine various aspects of the nation's water supplies and needs. In its committee report on water quality management, water quality problems affecting agriculture and arising from it were pointed out:

> In some Western States, programs for the control of salt and alkaline substances are required. Control of chemicals such as insecticides and herbicides, which may get into water intended for irrigation use, is also important.... Use of water for irrigation is largely a consumptive use, which means that a substantial part of the water so used is evaporated, or transpired, and is no longer available for other uses further downstream. What is returned to watercourses is often laden with salts, insecticides and other chemicals (Committee Print No. 24, p. 4, Feb. 1960).

The Committee identified many techniques to increase usable water supplies partly by increasing efficiency in present uses. They included seepage control and more efficient use of water in irrigation (Committee Print No. 23, Evaporation Reduction and Seepage Control, Dec. 1959). The peculiar counterproductive effects of the western water rights laws that may even be promoting inefficient and wasteful uses of water were recognized and studied to improve the laws recommended (Report of Senate Select Committee, 1961, p. p. 54).

National Water Commission

The National Water Commission was created by Act of Congress in September 1968 to take another look at our nation's water supplies, problems and needs, "giving consideration, among other things, to conservation and more efficient use of existing supplies [and] increased usability by reduction of pollution" (Act of 26 Sept. 1968, P.L. 90-515, 82 Stat 868, 43 U.S.C.A., 1962(a), Sec. 3(a)).

Although water quality was not an issue extensively treated and salinity was casually included in the discussion of point or non-point sources of pollution (Water Policies..., June 1973, Chap. 4), many recommendations were made to increase water use efficiency and sediment control. Notably are the needs for changes in water rights laws and enactment of sediment control legislation.

National Commission on Water Quality

The National Commission on Water Quality was created by Section 315 of the Federal Water Pollution Control Act of 1972. The Commission must make a determination to see if a mid-course correction to the Act is needed and to report its findings, conclusions and recommendations to the Congress (Water Quality, I-3, 1976).

The Commission concluded that a comprehensive study of the goals and requirements for 1983 could not be properly undertaken without attention to the progress made toward clean water by industries and municipalities under the 1977 requirements. Further, the Commission stated that it would "examine progress toward the elimination of the discharge of pollutants as an indicator of what will remain to be done after 1983" (Water Quality, I-4, 1976). Consequently, in its study the Commission focused primarily on the goal and effluent limitations for 1983, and the effects of applying those limitations (Ibid.).

Irrigation Return Flows--

The Commission found that irrigated agriculture affects water quantity and quality in that:

(1) it concentrates salts dissolved in water, primarily by the evapotranspiration of water;
(2) it may weather naturally occurring minerals from irrigated soils;
(3) it may add sediment to, or remove it from, receiving water;
(4) it may add nitrogen and phosphorus to a receiving water;
(5) it may add pesticides to a receiving water; and
(6) it will alter the quantity and temporal distribution of downstream flows if it is derived from, or returned to, surface waters (Water Quality, 1976, II-169).

It is important to note here that irrigation return flow volume is the difference between the volume diverted from the water supply and the volume consumed by evapotranspiration. The proportion of the total water infiltrated into the soil that is in excess of the consumptive requirements of the crop (for both evaporation and transpiration) is called the "leaching fraction" (Water Quality, 1976, II-169). The leaching fraction return to surface or ground waters is an "irrigation return flow" (Ibid.), as well as surface runoff from the croplands (tailwater runoff).

The Commission's findings on the salinity of irrigation return flows are as follows:

> The concentrations of total dissolved solids in subsurface irrigation return flows are higher, typically, than those in the water delivered to the field. The applied water contains some concentration of salts. Growing plants consume pure water, leaving the salts behind in a smaller remaining volume of water in the root zone. Leaching water serves to carry the salts away, maintaining the productivity of the soil. Increasing irrigation efficiency--reducing the leaching fraction--reduces the mass of salt diverted with the water. The volume of return flow in which the diverted salts are dissolved is reduced by a greater proportion, and the concentration of salts in the return flow is increased. The total mass of salt discharged is reduced, but the salts not diverted remain in the water supply (Water Quality, 1976, II-169-170).
>
> In addition to the salts contained in the applied water, irrigation return flows may carry salts which are added to the leaching water as it passes through the subsoil. It may also leave some of the applied salts in the soil as precipitates, so that the relative concentrations of dissolved salts in applied water and return flows are different. The importance of this increment of salinity depends on the solubility and composition of the subsoil material, and on the size of the leaching fraction. In some regions it is of major importance, while elsewhere it is insignificant.
>
> In most cases, regardless of the type of irrigation system used, and regardless of the efficiency of the irrigation system, most of the salt in irrigation return flow will be salt that was contained in the water applied to the land. Efficiency of irrigation has little effect on the quantity of water consumed by evapotranspiration requirement to produce a specified yield. Any water supplied in excess of this requirement will have an adverse effect on the yield and may cause a buildup of salts in the soil. Therefore, if the irrigation water is withdrawn from a stream, and the return flow is delivered back to the same stream, the efficiency of irrigation will not affect the total quantity

of either water or salt transported by the stream in the long run, unless the soil being irrigated still contains native soluble salts (Ibid.).

The Commission's findings regarding suspended sediment, fertilizer and pesticides and their impact on irrigation return flows are as follows:

Sediment

Irrigation water which passes through the soil is essentially free of suspended sediment, but tailwater may contain sediments. Whether tailwater has a higher or lower concentration of suspended material than the initial supply depends upon local factors. The amount of sediment discharged with tailwater can be reduced by passing the return flow through a sedimentation basin or, under certain circumstances, the tailwater can be recovered and reapplied without any intervening discharge to a receiving water body (Water Quality, 1976, II-170).

In areas where the natural sediment burdens in streams are very large, the practice of irrigated agriculture can result in a net removal of suspended material. Sediments originally carried by a stream may be deposited in diversion channels or in irrigated lands (Water Quality, 1976, II-170, 171).

The concentration of suspended material in watercourses is determined by stream velocity. At points where the velocity is low, sediments will be deposited; where the velocity is high, erosion will occur. Excepting areas where a stream bed is incised in bedrock, the burden of suspended material carried by a stream cannot be controlled by changing the discharge of sediment to it (Water Quality, 1976, II-171).

Fertilizer

Irrigation return flows may carry fertilizers with them depending on local conditions (Water Quality, 1976, II-171). In general, because phosphorus is readily adsorbed on soil particles, its concentration in drainage water can be expected to be very low. Some phosphorus will usually be associated with sediment contained in tailwater, but only small quantities are generally lost in this manner (Ibid.).

Nitrogen, particularly in the nitrate form, is a highly soluble and highly mobile ion. It can therefore be expected to be present in a highly unpredictable concentration in both tailwater and drainage water. Its concentration in tailwater is generally very low, and the concentration in drainage water is highly dependent on factors such as nitrate concentration in the soil, depth of drainage system, soil texture, concentration of organic matter in the soil, and depth to which the soil is aerobic (Ibid.).

Pesticides

Pesticides may be added to receiving waters by irrigation return flows, but the quantity added is normally very low and is highly dependent on soil type, type of pesticide, time of application, method of application, and other factors (Water Quality, 1976, II-171).

Most of the pesticides in current widespread use are only slightly soluble in water, and are strongly adsorbed onto soil particles or onto particles of organic matter in the soil. Pesticides that exhibit this sorptive behavior will not usually be found in drainage water, but they may be present in very low concentrations in tailwater (Ibid.).

Pesticides that are degraded rapidly by either sunlight or soil microbes will seldom be found in either tailwater or drainage water. In most cases, recovery and reuse of tailwater or removal of sediments from tailwater will, for practical purposes, eliminate any threat of pesticide pollution of receiving water by irrigation return flow (Ibid.).

Hydrology

Aside from increasing salinity by evapotranspiration of water, the greatest impact of irrigation on surface water is that it reduces total streamflow and alters its temporal distribution. Irrigation is the largest consumer of water, with forty to eighty percent of all water diverted for irrigation being consumed by evapotranspiration (Water Quality, 1976, II-172).

The dry weather flow of most uncontrolled streams is derived from ground water, most commonly from ground water recharged into alluvial deposits in the river basin during period of high precipitation or high stream flow. The amount of water stored in this manner is largely dependent upon the magnitude and duration of flood flows. In regions characterized by extended dry seasons, streams may go completely dry toward the end of the dry season (Ibid.).

Diversion of water for irrigation can alleviate this problem by increasing the quantity of water stored in alluvial aquifers. The return flow from irrigation water applied to land at some distance--a mile or more--from the river may require many months to flow back to the river, and may increase the dry weather flow to the extent that a naturally ephemeral stream becomes perennial. Such an alteration in the natural regime of the stream may be highly beneficial not only to aquatic organisms but also to downstream municipal, industrial, agricultural users. If there is no upstream reservoir to control releases during dry months, increasing upstream irrigation efficiency may be detrimental, rather than beneficial to all downstream users (Ibid.)

> Deeper aquifers that are recharged as a result of inefficient irrigation may also be utilized by municipalities, industries, and agriculture. In many such cases, increasing irrigation efficiency would result in impairment of the quality and decreasing the quantity of ground water that is available for reuse (Ibid.).
>
> In basins where supplemental water is imported for agricultural use, increased irrigation efficiency might have a detrimental impact on downstream users. If irrigators apply more water than is required to their fields, this water will be available later to downstream users. If more efficient water use were required, the upstream irrigators might well bring less water into the basin and deprive downstream users of a supply (Ibid.).
>
> In summary, the use of water for irrigation may affect local and downstream hydrologic conditions in a variety of ways, some of which are beneficial and some of which are detrimental. Similarly, increasing irrigation efficiency may be either beneficial or detrimental to downstream users. It is therefore inappropriate to suggest that changes in irrigation practice should be made without thorough study of the specific location involved (Ibid.).

Location and Distribution of Point Source Irrigation Return Flows--

> About 39 million acres of farm land were irrigated in the United States in 1969. About 97 percent of this land is located in the 17 western states, Arkansas, Louisiana, and Florida. About 257,000 farms in the United States were reported to be irrigated in 1969, and about 223,000 of them were in these twenty states.... About 57 percent of all irrigated land is in California, Texas, Nebraska, Colorado, and Idaho, and 36 percent is in California and Texas alone. No state other than these five has as much as five percent of the total irrigated acreage (Water Quality, 1976, II-173).
>
> All irrigated farms are potential point source dischargers, at least of tailwater, but only those that are artificially drained are potential point source dischargers of drainage water. Artificial drainage systems have been installed on only about 4.6 million acres (12 percent) of irrigated land. Artificial drainage systems have also been installed on about 55 million acres of non-irrigated land, but the cost and effectiveness of controls for this land were not determined (Ibid.).
>
> ...about three-fourths of all irrigated land in the western states was in farms with more than 200 acres of irrigated land in 1969. About one-fourth was in the 2.5 percent of farms that irrigate more than 1,000 acres. It is likely that a greater percentage of the irrigated land is in the larger farms at this time (Ibid.).

> About 41 percent of all irrigation water is self supplied from ground water, 15 percent is supplied by direct diversion of surface water, and 44 percent is supplied by irrigation organizations, primarily (97 percent) from surface storage, including about 20 percent from Bureau of Reclamation projects (Ibid.).

It has already been noted that agricultural land may deliver sediment, fertilizer, pesticides, and organic material to surface waters. While the volume of runoff from precipitation "can be predicted with reasonable accuracy, the quantities of pollutants dissolved and suspended in such runoff is less amenable to accurately estimate."

According to the Commission's findings, drainage systems have been installed on approximately 55 million acres of non-irrigated land and on about five million acres of irrigated land, and even though concentrations of pollutants are similar in drainage from irrigated and non-irrigated land, with the noted exception of dissolved mineral salts, permits are required for return flows from the former (Water Quality, 1976, II-198). Furthermore, techniques that control irrigation return flow pollutants are generally applied due to their beneficial impact on crop production rather than their capability for reducing pollutants (Ibid.). Techniques which produce the greatest reduction of pollutant discharges are improved irrigation scheduling, tailwater recovery, installation of sprinklers, and the lining of canals (Ibid.).

It is the contention of the Commission that:

> ...nonpoint contribution of sediments and other pollutants to surface waters by runoff from nonirrigated cropland could be reduced by almost one-half by applying recommendations of the Soil Conservation Service to all cropland needing improved practices. About 160 million acres--40 percent of all non-irrigated cropland--would benefit from application of these recommendations. The estimated investment cost would be about $2.6 billion, with the total annualized cost estimated at $0.65 billion per year (Water Quality, 1976, II-199).

Westwide Study

The United States Department of the Interior conducted a study of the critical water problems which face eleven western states. Recommendations from that study regarding water quality and pollution control, salinity control, control of erosion and sedimentation, and meeting water demands through conservation and use are as follows:

Water Quality and Pollution Control--

> 1. In addition to continuing a major effort to control point sources of pollution, the State water pollution control agencies and the Federal resource agencies should increase their efforts to analyze, prevent and control nonpoint sources of pollution.

2. In the development and implementation of prevention and control programs for nonpoint sources of pollution, the State water pollution control agencies should make maximum use of ongoing research and technical assistance programs of other State and Federal agencies.

3. The State's basin and areawide water-quality management plans and State water plans should be fully coordinated throughout all phases of development and implementation.

4. The Federal and State resource agencies should assume full responsibility for assuring that adequate consideration is given to the preservation and control of water quality associated with the future development, management and utilization of water and other natural resources. These agencies should devote immediate attention to those geographic areas which have critical existing or emerging water quality problems (Westwide Study Report..., 1975, p. 116).

Salinity Control--

1. Control of salinity levels should be an important part of all water resource planning studies. Ongoing program education and technical assistance programs should stress the importance of conservation measures in salinity control.

2. Specific recommendations in regard to additional studies are covered in chapters V and VI on regional and State issues. These are mostly tied to recommendations for total water management and level B studies under section 209 of the Federal Water Pollution Control Act. The agencies involved should coordinate and integrate the salinity control aspects of these studies.

3. Ongoing research aimed at finding practical and economic methods of controlling pesticides, fertilizer, and minerals from irrigation return flows should be pursued vigorously (Westwide Study Report..., 1975, p. 119).

Erosion and Sedimentation Control--

1. Ongoing erosion control programs of Federal, State agencies and local conservation districts should continue as the primary public effort to control erosion and sediment damage.

2. The Department of Agriculture in cooperation with appropriate land managing agencies, other Federal agencies, and the States undertake a study of natural diffused land sources of salts in the Colorado River to determine those erosion and sediment control practices which would be most effective in reducing the salinity in the river. This can be a cooperative effort with the Bureau of Reclamation's Colorado River Water Quality Improvement Program.

3. The States in cooperation with the Department of Agriculture, the Environmental Protection Agency, and others undertake studies to identify critical erosion and sediment producing areas as a part of State water pollution control programs.

4. Erosion and sedimentation studies for specific basins should be carried out as part of level B and special studies recommended in chapters V and VI (Westwide Study Report..., 1975, p. 128).

Meeting Water Demand Through Conservation Use--
State and local entities need to initiate studies to evaluate needed changes in State water right laws and water pricing. Specific actions which should be taken by Federal agencies are as follows:

1. Accelerate ongoing research efforts in irrigated agriculture to provide more precise answers in salt leaching functions, improved application systems, automation, and soil management.

2. Accelerate efforts to bring about water conservation and improved efficiencies by farmers and ranchers. Important here is education and technical assistance to bring improvement in onfarm irrigation systems and better scheduling of water application.

3. Continue salinity control studies in areas where water conservation and improved management measures can contribute substantially to reducing salinity (Westwide Study Report..., 1975, p. 136).

Summary of Federal Activities

Water quality control has gradually become a main activity of the Federal Government since the first comprehensive pollution control act was passed in 1948. Time has placed many burdens and constraints on those charged with carrying out the letter of the law enacted by Congress, and occasionally this pressure and haste have created problems of their own. Perhaps in no area of pollution control efforts by the Federal Government would this statement be more applicable than to irrigation return flow quality control. Strong resistance by water users and some states has kept a federal program from moving forward. Part of this justifiably stems from the legislative mandate. Part is dealing with a very complex problem that is hard to categorize into legal solutions that will stand up against rules of evidence in carrying out enforcement.

It is clear, however, that through the national investigations, Congressional amendments to the Water Pollution Control Act and the relentless efforts of EPA to carry out its charge, we are rapidly maturing in our capability to resolve the problems from irrigation return flows. That does not mean the problem is solved, just that now an appreciation for its complexity prevails.

PRESENT STATE ACTIVITIES

The status of state water quality legislation was described in Section 5 of this report. The following discusses the particular issue of state emphasis and activities in irrigation return flow quality control. The information contained is based upon conversations with personnel of the seventeen western states' water quantity and quality agencies most directly involved with the topic. These conversations took place between 1 June 1976 and 10 January 1977.

Extent of Irrigation Return Flow

When P.L. 92-500 was enacted and subsequent regulations promulgated to carry out the permit program, it was presumed that water quality degradation from irrigation return flows was significant and identified (or readily identifiable). Unfortunately for the program, the view from the top was not the same view as from the states' position, nor that of the water users, per se. As is true with most issues and positions, they are only relatively relevant. Regardless of how important or extensive the irrigated agricultural problem is to water quality at the federal level, when it comes time to implement a program, the program is largely dependent upon state action. Thus, the perception of the state agencies is important to the success of the program.

In discussing the extent of the irrigation return flow problem with state agency personnel in charge of carrying out the water quality and "water rights" laws in the seventeen western states as they perceived the problem, opinions varied. However, it was almost unanimous that: a) relative to other water pollution problems, degradation from irrigation return flow as a statewide problem is not significant or has not been adequately identified; and consequently, b) this control program element is a low priority on the agency activities; to the extent that, c) little or no action has been taken.

This synthesized statement as a general conclusion is subject to elaboration on a state-by-state basis. Table 4 provides a summary of the extent of irrigation return flow quality problems as perceived by the water agencies for each state. For almost every state, specific geographical problem areas were cited, along with the type of pollutant identified as causing the problem. Several states noted significant problem areas that exist (California, Colorado, Idaho, Montana, Utah), with the rest of the states having only limited or nonsignificant problems. In many cases, the lack of data was given as the reason that little effort was being made to control the quality of return flows and that the current efforts are merely to develop background information regarding the situation.

Kansas and Nebraska stated that ground water contamination from agriculture was the problem and not return flows reaching surface receiving waters. New Mexico considered ground water contamination an issue that requires specific state action.

Among the seventeen states, Idaho was the only state that places irrigation return flow quality control on a high priority as an activity of the water quality agency. It is one of few states that has identified this problem as one of major importance to a specific area of the state, and also one

TABLE 4. EXTENT OF IRRIGATION RETURN FLOW QUALITY PROBLEMS

State	General	Specific Problem Area	Otner Comments
Arizona	N.S.	Upper Gila & San Pedro Rs. (pesticide/herbicides) Wellton-Mohawk Pjt. (salinity)	Data lacking. No program.
California	L.P. other:	San Joaquin/Delta Area (nitrates), Santa Ana Basin, Salton Sea, Imperial Valley	Active program.
Colorado	N.M.P.	Colorado, Arkansas & Rio Grande Rivers (salinity & sediment)	No complaints from water users, no program, regulations foreseen.
Idaho	L.P.	Significant problem on Snake (sediment/turbidity)	High on priority. No complaints from water users. NPDES permits.
Kansas	N.S.		Low priority. Ground water contamination from agriculture most significant. No program.
Montana	L.P.	East of Continental Divide (sediment)	Data lacking. Low priority. No program.
Nebraska	N.M.P.		Ground water contamination from agr. most significant problem. No program.
Nevada	N.S.		No complaints from water users. No program.
N. Mexico	N.S.	Pecos River (salinity) Rio Grande (nutrients)	Problem from concentrating effects. Low priority. Ground water problem an issue. No program.
N. Dakota	N.S.	Garrison Division (salinity) major problem area	Low priority. No program.
Oklahoma	N.S.	Northwest Oklahoma (natural salinity)	Low priority. Data lacking. No program.
Oregon	N.S.		Low priority. NPDES Permits.
S. Dakota	N.S.	Belle-Fouche River, Oahe Project future concern	No program.
Texas	N.M.P.	Lower Rio Grande	Data lacking. Concentrating effects. No program.
Utah	L.P.	Sevier River major problem, Colorado River	No program. Supports BOR Water Quality Improvement Program.
Washington	N.S.	Yakima Valley, Walla Walla & Columbia River (sediments/nutrients)	Farm Plan Program.
Wyoming	N.S.	Green, Shoshone and Big Horn Basins (salinity)	Data lacking. No Program.

Abbreviations:
L.P. - Localized problem of major significance.
N.M.P. - Not a major problem.
N.S. - Not significant.

of the few states that actively attempted to implement the initial EPA NPDES regulations for agriculture. Also, Oregon, South Dakota and North Dakota issued permits, and California developed an alternative program.

Approaches to Irrigation Return Flow Quality Control

Action taken by the state water agencies includes a more extensive inclusion of irrigation return flow in the 208 planning process; attempts at permitting return flows, demonstration and pilot projects; and inclusion of water quality in water rights. Many reasons exist for the lack of complete involvement in this facet of water quality control. Among the most often cited was disagreement with the designation of irrigation return flow as a point source, as well as a lack of manpower. All seventeen states are utilizing the Section 208 planning process to identify irrigation return flow problems and to develop solutions for improved management practices.

Several states also attempted to implement a permit program under the original EPA NPDES regulations that covered irrigated agriculture. See Table 2 above for the status of NPDES program acceptance by the states. Idaho assisted EPA in issuing 28 permits to irrigation districts, of which seventeen were on appeal at the time of the N.R.D.C. v. Train decision in 1974. Nevada issued two permits to tile drain operators. Oregon issued permits to all the irrigation districts (approximately 15) that were over the 3,000 acre qualification in the regulations, of which approximately half have contested the permit issuance. Three of the districts undertook monitoring as required by the permit and have shown that water quality degradation is minimal for surface return flows.

Perhaps the most unique and effective permit program implemented at the state level is the California joint-permit. This approach was adopted to meet the EPA requirements and to identify the nature of the problem prior to control efforts. Essentially, the "joint-permit" requires all water and related organizations and individuals not represented by a legally constituted entity (i.e., irrigation and reclamation district), within an irrigation system to cosign a permit for monitoring of return flows. Because the intent of the permit is for monitoring and not enforcement, and because of the approach followed in issuing permits, the resistance from water users exhibited toward the federal program in other states was not directed toward the California program. (For a more complete discussion and permit example, see Appendix A, Report 2, Section 2.1.6.) Washington has a voluntary program underway and anticipates that any regulatory program will be implemented through the 208 planning process.

In addition to the two standard approaches to control irrigation return flow quality discussed above, several states have developed demonstration and pilot projects. Idaho is pursuing three specific agricultural projects in conjunction with 208 planning. The first is a demonstration project of improved conservation and management practices in the Twin Falls vicinity which encompasses a drainage basin of 4,000 irrigated acres. The Snake River SCD (Soil Conservation District) is the lead agency with assistance from the SCS, the Snake River Conservation Research Center of USDA-ARS and the University of Idaho. The second is also a demonstration project of improved conservation practices for reducing sediment runoff from dryland farming. The project is located in Latah County and is a cooperative undertaking directed by the Latah SCD and assisted by the SCS, University of Idaho, Washington State University, USDA-ERS, and Division of Environment. The third project is the development of a statewide agricultural pollution abatement program by the State Soil Conservation Commission.

Montana's Lewis and Clark Soil Conservation District is conducting a pilot project for sediment control. The purpose is to prepare rules and regulations for the district and to develop an ordinance for sediment control.

Utah has strongly supported the Water Quality Improvement Program conducted by the U.S. Bureau of Reclamation. Management of water is considered a primary means to minimize salinity detriments.

Washington, through its 208 planning, is developing a program directed at improving water and related land management activities as a means to improve water quality. This program primarily addresses problems resulting from soil erosion, which attempts to develop incentives for improving water use efficiency. In all probability, a general permit approach will be used in the state of Washington. In addition, or in conjunction with, the 208 planning approach, Washington has a financial assistance program with approximately $3 million available for agricultural pollution control. These funds are administered under the Washington Futures Program.

Two states reported incorporating water quality criteria specifically within new, extended and transferred water rights as a condition to receiving the right or change requested. California has authority under the 1969 Porter-Cologne Act to include water quality as an element of a water right. A general provision is now included as a part of all water rights and changes since 1970--that the permit holder (water right holder) will not unreasonably degrade the receiving waters as a result of using water for a beneficial purpose. In a few instances, specific water quality controls have been placed in permits. The state Water Resources Control Board has continuing authority to prevent waste, unreasonable use, unreasonable method of use, or unreasonable diversion of water (23 C.A.C., Sec. 761(a)). Over the past fifteen years, Oregon's Department of Water Resources has incorporated water quality into some irrigation water rights by requiring sediment settling ponds.

The inclusion of water quality into water rights assists in preventing the problem from occurring and does give the state a joint-effort approach by the water quantity and quality agencies when a problem does arise. Several other states have a preventative measure procedure in their operation. That procedure is to have the water quality agency systematically or optionally review water right applications (Idaho, Arizona and Kansas). In this way, potential quality problems from diversion and use of water can be identified and use conditions made a part of the right.

New Mexico has taken a firm stand on the irrigation return flow quality control issue which explains the extent of its activities in this topic. The New Mexico legislature, in adopting the 1973 Water Quality Act, specifically stated in Sections 75-39-11 the following limitations:

> A. The Water Quality Act does not grant to commission or to any other entity the power to take away or modify property rights in water, nor is it the intention of the Water Quality Act to take away or modify such rights...if, in the adoption of regulations and water quality standards, and in any action for enforcement of the Water Quality Act and regulations adopted thereunder, reasonable degradation of water quality resulting from beneficial use shall be allowed.

Thus, there is no direct or explicit approach or effort to control irrigation return flow quality. However, indirectly the state is working closely with the U.S. Department of Agriculture's Agricultural Conservation Program (ACP):

> ...the state's participation is restricted to those community ditch systems, which through organization and bylaws, quality as quasi-governmental organizations. These are commonly known as agencies. Such organizations can receive up to 70% cost-sharing from the federal government, a 15% grant from the State Engineer, and a loan at a rate of 2½% interest for up to 10 years from the New Mexico Interstate Stream Commission (letter of April 9, 1976 to G.E. Radosevich from New Mexico State Engineer).

There is a direct benefit to irigation return flow quality through the ACP and the state part of the program in the sense that efforts to improve water use efficiency through canal lining and systems rehabilitation results in more efficient water use, and consequently, improvement in water quality. At present, there are approximately 500 miles of canal that are lined, but it was pointed out that one of the real problems is that quite often there is an insufficient amount of federal funds to match the state funds, and, therefore, the state funds go unspent.

Also, the position of the Environmental Improvement Agency (EIA) is that irrigation return flows are non-point sources. Hence, EIA has not adopted the NPDES program and consequently has not attempted to issue any permits to agriculturalists. Their position is more clearly stated in the Lower Rio Grande Basin Plan Report (Water Quality Commission, September 1975):

> In general, it is the policy of the Water Quality Commission to consider as acceptable degradation those increased concentrations which result from the return of the weight of the constituents diverted.... Until regulations are published in the Federal Register regarding irrigation return flows, the Environmental Improvement Agency will include drains in the general agricultural category to be considered during the continuing planning process as a non-point source of pollution (pages I-2 and 4).

The specific approach of the Water Quality Control Commission of EIA was explicated in their March 1976 report entitled "The State of New Mexico Continuing Planning Process of Water Quality Management:"

The Commission will incorporate relevant local plans and policies in its water quality management planning, including those affecting present and future land use. Throughout the planning process, in-stream and groundwater quality will be analyzed and when it is documented that present or probable land use will significantly impact water quality, alternative engineering, land use management and regulatory approaches to preventing water pollution in these specific areas would be reviewed. Recommendations for program implementation and for designation of appropriate implementing agencies will be made.

Extent of Control

These eleven states have not issued permits for control of irrigation return flows: Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, Oklahoma, Texas, Utah, Washington, and Wyoming. The remaining six states have issued permits either under the federal NPDES program in cooperation with EPA or under their own program. In California, approximately 3 to 4 million acres are under 20 permits in the San Joaquin Valley. There are only 5 or 6 other permits issued in the state. These permits were issued under the state program by the Regional Water Quality Control Boards to irrigation, reclamation and water use districts and to individuals. EPA, in cooperation with Idaho, issued 28 permits to irrigation districts with 17 on appeal (none of the 28 are currently being enforced). Nevada issued 2 permits for tile drains. North Dakota and South Dakota have each issued a permit to two irrigation projects in their states. Oregon has issued approximately 15 permits to qualifying irrigation districts with half of the permittees contesting the issuance.

The important point that must be understood about the actions taken to date is that they have been for monitoring only. No instances of "control" were reported. In 14 of the states, it was stated that no water users were affected by action of the water quality agency activities in the sense of having to change their practices in order to improve the quality of their return flow discharges. The remaining three states (California, Oregon and South Dakota) did experience monitoring by some permit holders. In California, most permittees monitored, in Oregon three irrigation districts monitored, and in South Dakota the only permittee, an irrigation district, monitored the return flows.

Agency Resources and Interaction

Having discussed the extent of the problem from degraded irrigation return flows as perceived by the agencies and to what extent and how they have handled this facet of the water quality problem, three issues remain that may partially explain the action taken. These are: 1) the water quality agency's manpower resources in agricultural engineering; 2) the degree of interaction between the water quantity and quality agencies at the state level; and 3) the attitude toward the federal legislation and program regarding irrigation return flows. One and two will be treated in this subsection. The third issue is the topic of the next subsection.

The agency capability to successfully implement a particular program largely depends upon the competence of its staff to appreciate the intricacies of the problem, understand the constituency served, and carry out the program components. The water quality control agencies of each of the seventeen western states were queried on this issue to determine how many agricultural engineers or other persons with expertise in this field are on the staff. Ten states did not have such personnel working with the water pollution control unit (Arizona, Idaho, Montana, Nebraska, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming), although several stated their existing staff could handle the problem due to their developed expertise (Arizona, Idaho). In addition, Idaho has an SCS assignee assisting in development of a non-point source agricultural pollution abatement program. In lieu of having staff with these qualifications, a number of the agencies stated they relied upon the Soil Conservation Service (Montana, Nebraska, New Mexico, Utah), and the state university (Nevada, Oregon), or consultants (Nevada). The remaining seven states have one (Colorado, North Dakota, South Dakota, Texas) or more (Kansas, Oklahoma) agricultural engineers on their staff. On numerous occasions, it was emphasized that it is essential that these people have acceptability in the farming community if the program is to be a success.

California has established an agricultural unit within the State Water Resources Control Board to work on agricultural water quality control under the integrated (quantity and quality) approach adopted by the state. In addition, a regional water quality control board may have one or more agricultural staff (i.e., the Central Valley Region employs six agricultural staff).

The degree of interaction among state agencies most often depends upon their organizational structure. With the exception of two states (California and Washington), the remaining fifteen states have separate water quantity and quality agencies. In addition, water quality functions are frequently spread among several sister agencies. The most notable example is Oklahoma with seven agencies involved. The interaction ranges from integrated to little interaction, with the majority of states reporting limited interaction but good cooperation.

Both California and Washington have integrated water quality and quantity control under one agency (California--State Water Resources Control Board; Washington--Department of Ecology), and have achieved a high degree of cooperation and coordination. Water Right Administration and water quality control are a combined program and hence facilitate the implementation of both preventative and curative measures to water quality degradation from irrigation return flows.

To date, twelve states have established a limited degree of interaction but with good cooperation on an ad hoc basis (Arizona, Colorado, Idaho, Kansas, Montana, New Mexico, Nevada, North Dakota, Oklahoma, Oregon, South Dakota, and Texas). No formal organizational feature exists to insure systematic exchange at the staff level, and often coordination is lacking. However, six of the states have provided for coordination and cooperation at the policy-making level by including directors of the water quality and quantity agencies on water pollution or policy councils (Arizona), boards (Kansas, Oklahoma, Oregon, and Texas), or commissions (New Mexico). In Colorado, the State

Engineer is not a member of the Colorado Water Pollution Control Commission. Rather, the Director of the Department of Natural Resources and Director of the Colorado Water Conservation Board, the water planning and development agency, are members of the Commission. The State Engineer's Office (Division of Water Resources) and Colorado Water Conservation Board are both within the Department of Natural Resources. The remaining three states have established little interaction. Wyoming, however, has created the interdepartmental conference which is a monthly meeting of representatives from many state agencies concerned with natural resources.

As previously mentioned, the uniqueness of the occurrence of irrigation return flows from the exercise of the right to use water necessitates a high degree of cooperation and coordination in any effort to manage the quantity and quality of the discharges. Several states have or are considering an integrated agency approach (Idaho, Kansas, Oklahoma, and Texas); but, this is a delicate issue which must be dealt with cautiously and with a well formulated objective so that the results will be functional and operational.

Attitudes Toward the Federal Program

Since 1972, there have been many changes in the federal program for control of water quality degradation from irrigation return flows. Most noted is the N.R.D.C. v. Train decision (in 1974) which directed EPA to reformulate regulations that would not exclude certain point sources (i.e., irrigation return flows from 3,000 contiguous acres or less) and the recent innovation of a general permit program (since mid-1976) to comply with the court's decision. Until late 1976, most state water quality agencies were not fully appraised of the general permit program, and in fact, the proposed regulations were not published in the Federal Register until February 4, 1977.

Consequently, the attitudes and activities of state agencies and agricultural water users are primarily based upon the original regulations promulgated by EPA which included irrigation return flows as point sources, but contained the 3,000 acre exclusion. The activities have been discussed above. But the attitudes are also important to understanding the reasons for the actions taken, or lack thereof.

Twelve states categorically voiced opposition to the inclusion of irrigation return flows as a point source and thus were against the original EPA NPDES program on this topic. Of these states, Washington opposed the original program but is not in opposition to a general permit program. Arizona, Nevada and Texas expressed their reason for not being in favor because the program was meaningless in their states due to the nature of non-perennial stream flows or most waters for irrigation being pumped from ground water supplies. Arizona and New Mexico considered the non-inclusion of ground water contamination a major gap in the program.

Idaho was the only state in which the water quality agency was not opposed to the permit program; however, Idaho state agency personnel have stated that in the future they would only utilize the permit approach when alternative measures (such as voluntary programs) have failed. California was not satisfied with EPA's approach and developed a joint-permit program which met both its' and EPA's needs. Nebraska and South Dakota did not express strong opposition, but merely expressed concern that even the proposed general permit program will do nothing to improve water quality. Several other states are of the same opinion. Other states felt that EPA is insensitive to irrigated agriculture and has overemphasized the irrigation return flow problem.

One state, in particular, felt it had a good and workable system prior to 1972: "Then the Federal Government came in and instead of resolving the problem by getting the planning engineer of the state with the planning engineers for the city or the industry or the manager of the irrigation district in a situation where they could cooperate in resolving the problem, the matter became so difficult that the lawyers came into the picture. Then the staff of _____ spent most of its time justifying to EPA what the state was doing, and why it wasn't carrying out the Federal program as far as EPA wanted it to" (paraphrased statement made during an interview; confidentiality being maintained). Several states expressed the opinion, had EPA continued with the original program while the momentum was high, by process of elimination due to a lack of significant problems excepting specific local areas or basins, most states would not have had to issue permits. Many emphasized the concern that, partly due to N.R.D.C. v. Train, and EPA's shifting programs, the agencies were caught in a credibility bind with the water users.

Summary of State Activities

Previously, it was stated that little progress has resulted from the federal efforts to control the quality of irrigation return flows. With only a few exceptions, this same statement applies to the progress at the state level. This is not meant to be a derogatory or critical remark in light of the complexity of the subject matter and confusion in the legal arena. Nonetheless, the only statement that can be made about the federal program and state efforts, where applicable, is that water users have been so effectively polarized that any future efforts will be even more difficult to implement. Considerable effort will be required to reestablish credibility between water agencies and water users. The polarization of water users is evident from conversations with state officials and the statements made in newsletters and press releases of statewide water user organizations. (Appendix C contains a list of the water user associations and their publications.)

SECTION 8: AN ALTERNATIVE APPROACH TO IRRIGATION RETURN FLOW QUALITY CONTROL

CONTENTS

AN ALTERNATIVE APPROACH TO IRRIGATION RETURN FLOW QUALITY CONTROL. 124

PHILOSOPHY AND CRITERIA FOR EFFECTIVE CONTROL 124

The Need 124
Philosophy 124
Criteria . . . .

AN INFLUENT CONTROL APPROACH. . . . . , 126

Irrigation Return Flow Characteristics 126
Theme of Influent Control Approach 127
Assumptions. 127
Influent Control Approach Components 128

EPILOGUE. 138

SECTION 8

AN ALTERNATIVE APPROACH TO IRRIGATION RETURN FLOW QUALITY CONTROL

PHILOSOPHY AND CRITERIA FOR EFFECTIVE CONTROL

The Need

Water quality control from irrigation return flows has perhaps caused the greatest degree of disenchantment among state and federal personnel charged with carrying out water quality programs under P.L. 92-500 than any other category of pollution sources. Since the time that the first regulations for irrigation return flows were promulgated in 1973, there have been strong and distinct differences of opinion among the various agencies dealing with water at both state and federal levels of government, and within their ranks as well. Many western states have called a stop to their programs until EPA adopts what the states consider a workable approach. The legal gyrations of the past four years have caused them to undertake minimum activity so as not to violate directly any particular law or regulation. Not one western states has completely and enthusiastically embraced a program of including irrigation return flows as a "point source" and thus subjecting all irrigation to the NPDES program.

Part of the problem for the disenchantment stems from the physical difficulties in dealing with the irrigation return flow quality problem where it does exist. Equally important is the lack of a philosophical foundation and thrust to resolving a problem of this immense complexity, as well as inherent resistance to control.

Viewing the problem from both the position of water users and agency personnel charged with controlling the problem, this study attempts to be both logical and pragmatic in formulating an implementable and sustaining approach to irrigation return flow quality control. The philosophy and criteria which follow are building blocks to the proposed Influent Control Approach (ICA) set out in this section. It is the authors' opinion that awareness, not concurrence, is essential to an understanding and acceptance of a program.

Philosophy

The proposed philosophy upon which to formulate a successful program for control of irrigation return flow quality consists of four interlocking propositions. First, the ultimate goal achieved by the federal and state agencies is improved water quality by way of improved water management, with this particular study focusing upon the return flow characteristics and problems of irrigated agriculture. In this context, improved water management means water quality enhancement through reductions in tailwater runoff, seepage losses and deep percolation losses (i.e., surface and subsurface return flows, which are point and non-point sources, respectively).

Second, the program should promote social and economic well-being through cooperative action. Every effort should be made to prevent polarization between state and federal agencies and local water user groups. An approach must be designed to stimulate a tripartite relationship between the water users and the state and federal agencies, while still maintaining the identity of each.

Third, only attack the problem after it has been realistically identified.

Fourth, voluntary compliance is more desirable than forced or involuntary compliance in implementing a management or control approach.

Criteria

Based upon this philosophy, the following criteria must be met for an implementable and sustaining program in irrigation return flow quality control:

1. The approach should result in improved water quality through better water management practices specifically and better agricultural practices generally. In the context of this report, better agricultural practices can be achieved through joint progress in two areas: a) proper land and water use; and b) proper application of agricultural chemicals. As stated previously, water management includes effects upon the quantity and quality of surface and subsurface return flows.

2. The approach should prevent social disruption and polarization of water users (e.g., individuals, irrigation companies and water districts) and state and federal agencies. Maintaining separate identities is necessary, maintaining opposition is not. In most western states, water users have gone on record opposing past federal and state efforts to control irrigation return flow quality.

3. The approach should be palatable to water users. Some of the most often expressed concerns of the water users are: What is the problem and how significant is it; How am I involved; If I agree to a permit, what does that mean to me now, as well as potential control in the future (i.e., what rights and liberties am I giving up by agreeing to a nebulous program); What is it going to cost; What benefits will be achieved; and, Who pays for nature's discharges?

4. The approach must be feasible, flexible and allow for state agency discretion in working with local entities. State agency concerns which must be met include: a determination of the significance of the problem; ability to implement the program because of manpower limitations, identification of pollution sources, failure of past programs to include subsurface flows, credibility with water users; conflicts with other state agencies (e.g., water quantity administration and agriculture agencies);

and, the ultimate impact of such a program upon water quality, flow regime of streams and water users.

5. The approach should improve the credibility of state and federal agencies. Presently, most agricultural water users feel alienated against the federal and state water quality control agencies.

6. The approach should utilize existing institutions (e.g., laws and organizations) and accepted concepts (e.g., designation of problem areas such as critical ground water basins, beneficial use, and duty of water) as much as possible.

In order to implement any approach, both the water users and the agencies must have knowledge of the resources they are "managing." The irrigation system is too highly integrated and complex to be subjected to a rigid unilateral control program.

AN INFLUENT CONTROL APPROACH

Irrigation Return Flow Characteristics

Irrigation return flows have few characteristics which allow them to be viewed as a typical point source pollution discharge problem. Most pollution contained in irrigation return flow occurs as a natural process of diverting and using water for a legally appropriated beneficial use. But, the pollution often occurs beyond the boundaries of the control of the water user. Thus, the first distinct feature is problem identification. Because the degraded return flows may be either surface or subsurface, and most often diffused rather than collected into a discrete conveyance system from the contributing source, the second feature is contributor identification. From a technological standpoint, contributor identification requires an evaluation of the sources of pollution; whereas, from a legal viewpoint, contributor identification requires a determination of who is polluting.

Allocation of water under western states laws requires that it be for a beneficial use. Water allocated for irrigation is generally alloted to specific lands with the quantity based upon a fixed statewide duty of water standard (e.g., 1 cfs/70 acres in Wyoming; 2 acre-feet per acre in Nebraska).[1] The right to use water is a property right to the holder, which is to be exercised according to priority with other users and availability of flow. Because there is no prorationing during shortages as under the riparian doctrine, and because this property right is one of rapidly increasing value in the West, the inherent incentive to the holder is to protect that right by diverting the full entitlement without regard to the fine line between beneficial use and waste. Thus, a third factor emerges, i.e., law and customary diversion preempt equal weight to external diseconomies.

The fourth feature gives rise to the proposed influent control approach described hereafter. That is the correlation of input to output. In addition to the possibility of controlling degraded return flows at their discharge, or effluent control, an impact can be exerted upon the quality of water discharged from irrigation uses by changes at the input stages, i.e., delivery and application of water. Because of the elusive nature of irrigation return flows, the traditional approach of effluent control is not considered adequate nor feasible in light of a more economic, simple and functional alternative within the control of the water user and influence of state water officials. That alternative is to control the quantity of influent. In the case of irrigation return flow, this includes water user discretion on the delivery and application of water (use of well-known technologies such as canal lining to curve excessive seepage losses during conveyance, or improved irrigation methods and practices to reduce deep percolation losses and tailwater runoff), proper land use to prevent erosion of soil and subsequent sediment pollution in tailwater, and proper application of fertilizers and pesticides.

---

[1] In a few states, Nevada for example, discretion to determine quantity is given the State Engineer.

These four features--plus a) the system of water quantity and quality administration at the state level; and b) the peculiarities of our judicial system, rules of evidence and burden of proof--require an approach which is both preventative and curative but within the parameters of a known demonstrated problem. Because end-of-pipe treatment is neither technically satisfactory, nor economically justifiable, the Influent Control Approach (ICA) is designated to get at the cause, not the consequence, of the problem and promote alternative solutions within the control and capability of irrigation water users generally. Where voluntary action to alleviate the known problem is not taken, existing laws for water quantity use and control of discharges by permit can be exercised.

Theme of Influent Control Approach

The underlying theme of the ICA can be summarized as:

1. Proof before control.

2. Proceed cautiously and positively.

3. Stimulate voluntary action based on demonstrated need to change.

4. Maintain a relationship between agencies and water users.

5. Create and/or maintain credibility.

Assumptions

The Influent Control Approach is premised upon ten assumptions:

1. Achieving the goals of P.L. 92-500, the Federal Water Pollution Control Act of 1972, and policies of federal and state laws to improve the use of our national resources is highly desirable.

2. The concept of property rights in water and other constitutitonal guarantees will be maintained.

3. The legal procedures of the judiciary and agencies will be utilized.

4. Improved agricultural practices and improved water management will result in improved water quality.

5. Irrigation return flow problems and appropriate solutions to these problems are site specific.

6. Water users (farmers) will respond when it has been demonstrated that there is a problem to which they are contributing (in the absence of substantial economic disincentives).

7. Technical and legal solutions to identified problems must be appropriate and viable (technically sound, economically feasible, legally implementable, and socially acceptable).

8. Many irrigators will respond on a voluntary compliance basis.

9. Those users who do not respond will feel a local social pressure as a result of being "out-of-tune" with the newly evolved customs of the community.

10. Regardless of approach, there will be some users who will not respond or will resist change, thereby requiring some mechanism for enforcement.

Influent Control Approach Components

As was alluded to above, the distinction of this approach to irrigation return flow quality control is to correct indirectly the unreasonably degraded discharges caused by irrigated agriculture by directly affecting the influent or input to the system. This approach is based upon the assumption that improved agricultural practices (IAP) and improved water management (IWM) will contribute to improved water quality (IWQ). In specific context of this report, it is further deduced that best management practices plus best agricultural practices will yield improved irrigation return flow quality control (IRFQC), which in turn provides improved water quality:

$$\text{BMP} + \text{BAP} + \text{IRFQC} \longrightarrow \text{IWQ}.$$

Because the nature of agricultural pollution from irrigation is too complex to rely upon end-of-pipe treatment, the cause of the problem is examined in its broader context, i.e., present water management and agricultural practices, with the emphasis upon only those elements of agricultural practices relating to or having an affect upon return flows. The concept of best management practices is currently employed by EPA and the states and refers here to improvements in local[2] water management. Best agricultural practices is used to include proper land use and proper application of agricultural chemicals.

---

[2] Local is used to distinguish water quality control within the irrigation system or subsystem from state and national control.

To reiterate, every effort in formulating this approach was made to decentralize the act of control to the lowest common denominator--the irrigator --because of his ability to impact voluntarily and directly the quality of return flows and because of a recognition that agriculturalists traditionally are independent people who prefer to be actors, not pawns. The components of the ICA thus provide: 1) the design and direction to irrigation return flow quality control; 2) the opportunity for voluntary compliance by water users in problem areas; and 3) the means for responsible government agencies to effectively assert involuntary compliance upon those contributing to the problem who refuse to adopt better practices.

The Influent Control Approach is designed to improve water quality by reducing excessive seepage, tailwater runoff and deep percolation, reducing sediment in return flows through erosion control and reducing chemical concentrations in return flows through licensing and/or control resulting from overapplication of pesticides and fertilizers. Since irrigation return flow quality problems differ from one irrigation system to another (in many cases, improved water management results in higher salinity concentrations in subsurface irrigation return flows), the approach provides the latitude to introduce change and control according to the nature of the problem, without requiring unnecessary compliance by those irrigators outside problem areas.

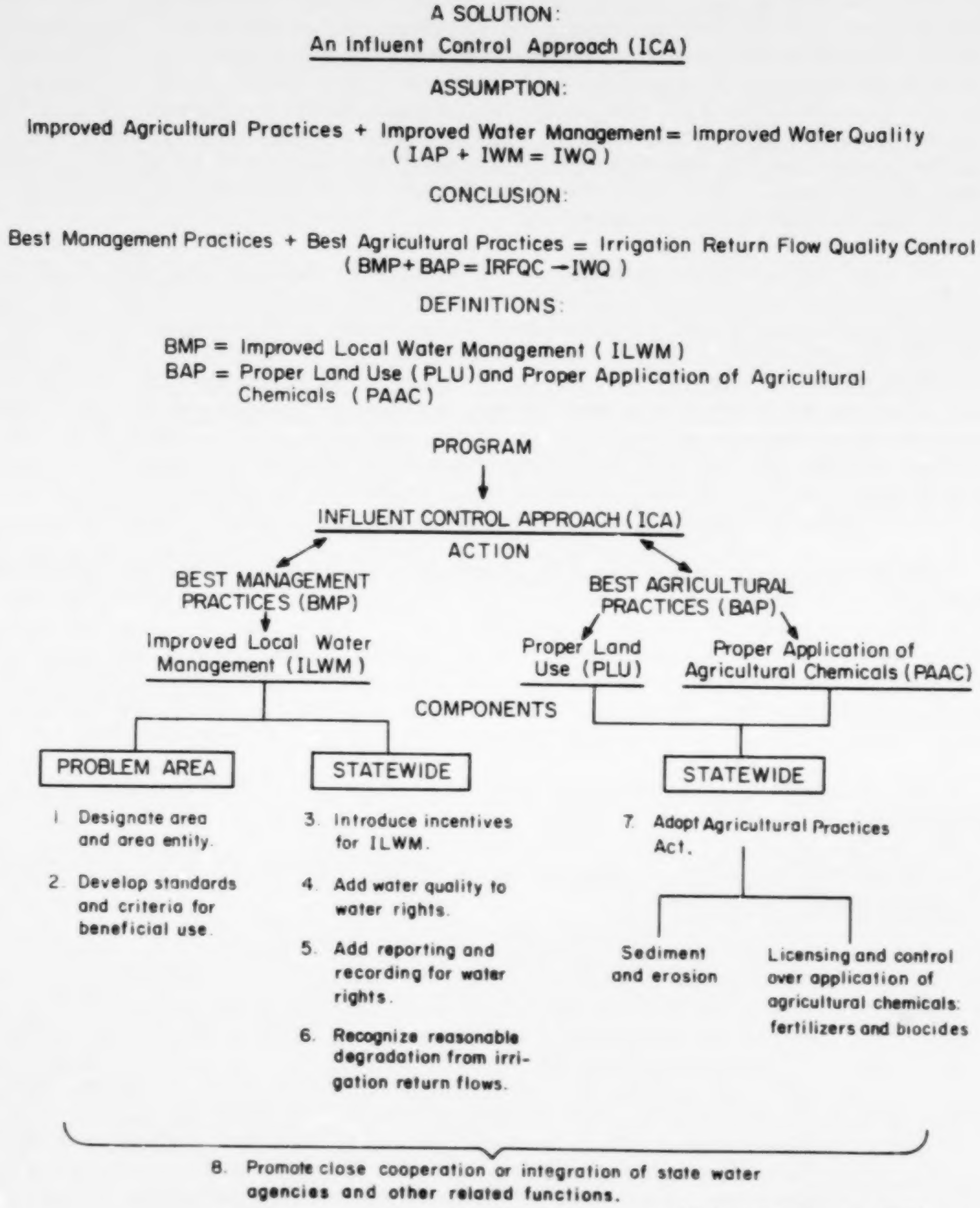
Based upon this background, the Influent Control Approach is designed with eight specific components. The first six components pertain to improving local water management, with components 1 and 2 having application in the problem areas only and components 3 to 6 having statewide jurisdiction. Component 7 pertains to land use and chemical applications affecting water quality and has statewide jurisdiction. Component 8 focuses upon the functional ability of agencies to carry out the program (see Figure 18).

The Influent Control Approach consists of the following components to be carried out by the states:

1. Designate Areas for Irrigation Return Flow Quality Management and the Responsible Area Entity.

Action: Based upon monitoring and analysis for identifying significant irrigation return flow problem areas within the state, the state agency will: a) designate the boundaries of the problem area, which may be the boundaries of an irrigation system or subsystem or watershed; b) designate an entity, i.e., legally constituted body representing water users within the area, to undertake responsibility for working with the water users, collecting data and disseminating information. The area entity may be a newly formed organization, an existing organization, i.e., irrigation district, that assumes the program, or a federation of numerous existing organizations in the designated area; and c) insure that the entity is carrying out the best management practices developed for this area.

Rationale: Applying the designated area approach to controlling unreasonable degradation from irrigation return flow enables the state to


A SOLUTION:
An Influent Control Approach (ICA)
ASSUMPTION:
Improved Agricultural Practices + Improved Water Management = Improved Water Quality
(IAP + IWM = IWQ)
CONCLUSION:
Best Management Practices + Best Agricultural Practices = Irrigation Return Flow Quality Control
(BMP + BAP = IRFQC → IWQ)
DEFINITIONS:
BMP = Improved Local Water Management (ILWM)
BAP = Proper Land Use (PLU) and Proper Application of Agricultural Chemicals (PAAC)
PROGRAM
INFLUENT CONTROL APPROACH (ICA)
ACTION
BEST MANAGEMENT PRACTICES (BMP)
BEST AGRICULTURAL PRACTICES (BAP)
Improved Local Water Management (ILWM)
Proper Land Use (PLU)
Proper Application of Agricultural Chemicals (PAAC)
COMPONENTS
PROBLEM AREA
STATEWIDE
STATEWIDE
1. Designate area and area entity.
2. Develop standards and criteria for beneficial use.
3. Introduce incentives for ILWM.
4. Add water quality to water rights.
5. Add reporting and recording for water rights.
6. Recognize reasonable degradation from irrigation return flows.
7. Adopt Agricultural Practices Act.
Sediment and erosion
Licensing and control over application of agricultural chemicals: fertilizers and biocides
8. Promote close cooperation or integration of state water agencies and other related functions.

(Radosevich & Skogerboe, 1977)

Figure 18: Influent Control Approach to Irrigation Return Flow Quality Management

focus only upon those areas within its boundaries where a problem has been identified. Thus, not all irrigators are depicted as shifting externalities (i.e., costs from use of degraded water) upon the public and downstream users; all irrigators regardless of how well they manage their water and land resources are not subjected to the time-consuming procedures and implications of a permit system. Consequently, water users are not collectively polarized against the efforts of state and federal agencies to reduce and prevent water quality degradation. This first component is the cornerstone of the influent control program because it draws attention only to problem areas without the guilt insinuations or accusations that farmers are so sensitive to.

From a practical point of view, the area entity, which may be represented by an existing irrigation or water-related organization, would utilize a representative board of commissioners that would be responsible for carrying out monitoring, discussing ways to alleviate unreasonable degradation by irrigation return flows to receiving waters with water users in the designated area, and encouraging voluntary improvement of agricultural practices by those users identified as contributing to the area's problem. For those users (or entities representing those users within an area) who refuse or fail to respond as recommended, the area entity would notify the state water quality control agency of the specific noncompliance (the process of self-policing is generally distasteful to the farming community), and the state would then proceed under existing federal and state law to initiate control and enforcement -- that is, under the general provisions of the water pollution laws, prohibiting discharges of pollutants and violation of stream standards. In these cases, the identified and noncomplying irrigator's discharge can be required to obtain a permit under the regular NPDES program. The area entity is thus responsible for assisting in managing the agricultural practices within the designated area, but control and necessary enforcement are appropriately left to the state.

Precedent: The concept of designated areas for resources control and management is well-recognized and applied in many western states for ground water and municipal water supply. In most instances, water users participate on commissions or boards having jurisdiction over the management area.

2. Develop Standards and Criteria for Beneficial Use in Designated Areas.

Action: For each designated area within a state, the water quantity and quality agencies will collaborate to arrive at standards and criteria for beneficial use of water. Such standards and criteria will not constitute an impairment or taking of water rights, but rather be the technical limits of water delivery and application under the climatic, soil and other agronomic conditions of the area. These conditions for water use would be tantamount to a calculated "duty of water"[3] for the area in light of the return flow quality problems.

Rationale: Under the water laws of each western state, water is allocated under the concept of beneficial use. This term is generally not defined, it is normally nebulous, but does in general meet the needs for both allocating and distributing water within the state. However, in certain areas due to soil characteristics and water use practices, irrigation return flow quality problems do develop which are directly related to the delivery and application of water. Within designated areas, it is necessary to develop specific standards and criteria for beneficial use that still comply with the concept of a water right under state law.

Precedent: Under Nevada water law, the State Engineer has discretion to determine the duty of water based upon the site specific characteristics of the irrigated area, the type of use to which the water will be put, and the impact upon surrounding water users. Utah is another state that has applied the variable duty of water concept in determining the appropriate amount of water to allocate under a water right. However, the state agency in Utah has had to proceed through a judicial determination. These two states are in contrast to the standard concept of duty of water found in many states--for example, Wyoming and Nebraska--in which a fixed duty of water has been adopted that is applicable statewide.

3. Introduce Incentives to Use Water More Efficiently.

Historically, the Agricultural Conservation Program administered under the U.S. Department of Agriculture, with technical assistance provided by the Soil Conservation Service, has provided cost-sharing funds to farmers and irrigation districts for irrigation system improvements, most of which had water quality benefits. This program has been relatively inactive in recent years because of lack of funds. However, this program should play a very important role in the Influent Control Approach, as part of the federal-state-local water users tripartite.

Action: Most western states have revolving funds or low interest loan programs for water resources planning and development. Generally, these programs require the applicant to be an irrigation district or other corporate body. Where such state programs exist, change in the legislation and/or regulations for participation qualification should be made to allow: 1) individual irrigators to qualify; 2) broaden the use of funds to include on-farm improvement practices as well as improvement of delivery systems; and 3) include in the objectives of the program the improvement of water quality. When states have no such programs, a low or no interest loan program containing the above three components should be adopted, in order to assist cooperatively the Federal Government and local water users in achieving improved water management and agricultural practices.

---

[3] Duty of water means the quantity of water necessary for effective use for the purpose to which it is put under the particular circumstances of soil conditions, method of conveyance, topography, climate, and crop grown (Water and Water Rights, Vol. 5, Sec. 408.2, 1972).

In addition, dissemination of information about other state and federal agency incentive programs should be carried out by the state water agencies, particularly to the designated management areas and cooperation extended to insure utilization of such programs.

Other incentive programs, which may require legislative enactments or agency regulations, could include encouragement of trading, leasing or selling of "saved" water from more efficient practices as an inducement to improve the delivery systems and methods of application. State or local water markets, under the direction of the State Engineer (or equivalent state office), could monitor or control the uses of these waters.

To counter the traditional attack against such an incentive program, it is highly conceivable downstream juniors would be the most likely to benefit, particularly if they were given priority to pay for this water. At the same time, it is recognized that in many cases the present irrigation return flows make up the water supply for downstream water right holders; therefore, the only way to "save" water is to reduce present consumptive use, which can be accomplished by employing trickle irrigation, reducing irrigated acreage, or phreatophyte eradication.

Rationale: By providing incentives for water users in designated areas, the farmers will have an opportunity to improve voluntarily their water use practices, which in turn will result in improved irrigation return flow quality. This is consistent with the philosophy of encouraging voluntary compliance versus forced or involuntary compliance. Further, if states are to create standards and criteria for beneficial use, it is the opinion that some mechanism should be made available to the farmers that will facilitate compliance with the new criteria. Without it, irrigators are on solid legal grounds to continue exercising this water right as they have in the past. The legal cost to the state and water users to change this traditional practice may far outweigh devising a process and procedure by which water users can be encouraged to improve their efficiency in water use for both quantity and quality benefits, while still protecting the downstream users.

Precedent: Funds have been made available to irrigation districts and water users through the federal Department of Agriculture-

Agricultural Conservation Program, with the Soil Conservation Service providing technical assistance. In addition, several states have statewide programs in which low or no interest monies are made available to water entities or water users for improving their delivery systems. In Wyoming, the funds may be used for improving laterals and application practices.

4. Include the Element of Water Quality in New Or Transferred and Changed Water Rights.

Action: The water quality element should be a general provision added to all new water rights and requests for extensions, changes in use and transfers, in order to provide the necessary authority to state water agencies for later setting and enforcing of numerical standards (either with respect to water application or return flows, or both). Where water quality standards on streams for beneficial use have been realistically set, such standards can be incorporated by reference to water rights from that source of supply.

This action may require legislative endorsement, but under the vast majority of state law, it is conceivable that agency regulations can initiate this component.

Rationale: The element of water quality is only implicit in western state water laws, with the exception of California which has made it an explicit element in all water rights since 1969. As a consequence, water users must normally rely upon common law doctrines and private litigation to protect their water right where the quality has been degraded to levels that hinder usage. Because the quality element is not explicit, as are the other elements of a water right--quantity, source, point of diversion, type of use, and place of use--the state agency charged with administration of the water laws and rights is not in a favorable position to initiate action to prevent harm from water quality deterioration, and thus the management capability extends only to quantity control.

Precedent: In California, there is a general provision (which is added to all new water rights, extensions on water rights, and changes in ownership or type of use) that the water will be used in such a manner as not to degrade unreasonably the usage of water for downstream users. In some instances, the State Water Resources Control Board has also applied numerical water quality standards to particular water rights.

5. Adopt and Enforce a Reporting and Recording System for Water Rights.

Action: Notice would be given to all water users and water right claimants to submit a report to the water right administrative agency indicating their name, address, basis for claiming right to use water, use of water, source and beginning date for water use.

Water users may be given notice by publication in local newspapers. Many states have already initiated a "tabulation of water rights" program to acquire this data. It is necessary, however, to adopt a system of annual reporting, indicating particularly changes in ownership since other material changes (e.g., transfer in type and place of use) require state approval.

Rationale: Although this component is more directly related to improving water management within the states rather than irrigation return flows only, it is related to the ability of the state to manage water quality because of the relationship between the diversion and application of water and the resultant return flow water quality. Most western states have inadequate knowledge of present ownership of water rights, and thus: a) have procedural difficulties in notifying water users of matters directly affecting their rights; b) are unable to effectively remove "paper water rights" from the records that are maintained and thus making forfeiture provisions in the law nearly useless; and c) would be hampered in incorporating the element of water quality to new, extended or changed water rights.

One of the major difficulties faced in attempts to control irrigation return flow quality is "contributor identification." A data base of who the water right holders are will greatly facilitate efforts to encourage implementation of best management practices and best agricultural practices.

Precedent: Both Idaho and Oklahoma have a system by which the current owners of water rights are required to submit to the state water right administration agency an annual report (in the case of Oklahoma, this is done on a computer card) which specifies who the users are, where the water is used, and approximate quantity. Failure to submit these annual reports serves as prima facie evidence of non-use and could lead to forfeiture of the water right.

6. Recognize Reasonable Degradation from Agricultural Water Use.

Action: Legislative recognition of this natural consequence of water use for irrigation purposes is needed at the state and federal levels.

Rationale: It is commonly accepted that any use of water for irrigated agriculture is going to result in some degradation of the quality of return flows. To pretend otherwise is to either continue a process of "playing the game" or ultimately it will eliminate irrigated agriculture with its obvious adverse effects. Common knowledge knows the latter will not occur, but a tremendous and unnecessary cost to prove it could be extended upon irrigators and the public through the failure of legislatures to recognize natural processes of water use.

Precedent: New Mexico has adopted a specific provision in their statutes which states that "...reasonable degradation of water quality resulting from beneficial use shall be allowed" (NM Rev. Stat. Sec. 75-39-11).

Montana has arrived at the same conclusion by defining "naturally occurring conditions" in their water quality standards as those "present from runoff or percolation over which man has no control or developed land where all reasonable land, soil and water conservation practices have been applied" (MAC 16-2.13(10)-S14480, Water Quality Standards, Sec. (3) Definitions). Several state supreme court decisions also recognize certain degradation from water use, e.g., Ravndale v. North Fork Placers (91 P.2d 368, Idaho, 1939) where some contamination from a mine will necessarily occur to a stream.

7. Adopt an Agricultural Practices Act.

Action: Many of the 17 western states have laws and programs requiring the licensing of agricultural chemical distributors and applicators with the state Department of Agriculture. The laws and/or programs should be revised or new legislation adopted to include the following:

a) Sediment and erosion control.

b) Licensing and control over application of agricultural chemicals to include pesticides and artificial fertilizers.

c) Creation of an agricultural practices control board consisting of representatives from the agriculture, water quantity and quality, soil conservation (if separate), and fish and wildlife agencies, and appointed members of the public. The board's functions would primarily be establishing rules, regulations and procedures for carrying out a) and b) above and insuring functional implementation through coordination and designation of duties to appropriate state agencies.

Rationale: Due to the impact upon water quality resulting from the application of herbicides, pesticides and fertilizers in the agricultural sector, and the inability of the state to control these practices, it is highly recommended that an agricultural practices act be adopted which requires licensing and monitoring of distributions and applications of such chemicals and control over harmful land management practices contributing to erosion and subsequent sediment problems in receiving waters. There may be many other agricultural practices which could be included under such an act.

It is essential to recognize the interconnection between these activities and resulting water quality problems (which may in turn contribute to downstream and ground water supply problems) and the usual division of jurisdiction and duties between various state agencies. Short of complete reorganization of state agencies to insure interrelated activities all under one agency (which may not only be impossible but highly undesirable), an Agricultural Practices Control Board (APCB) consisting of action representatives from the various involved state agencies and members of the public could insure coordination and implementation of their rules and regulations. The current 208 planning bodies could be designated to assume local implementation if they have, or receive, the necessary authority.

Precedent: Again, California has led the way in licensing and monitoring of commercial applicators of herbicides and insecticides. Oregon has been considering the appropriateness of such an act to alleviate their major irrigation return flow quality problems. However, a comprehensive agricultural practices act has not been prepared in any of the western states. Iowa had adopted erosion control legislation that even authorizes imposition of a fine on those who fail to adopt approved practices.

8. Promote the Close Cooperation or Integration of State Water Agencies.

Action: To facilitate the implementation of the Influent Control Approach to irrigation return flow quality control, it is important that close cooperation and coordination exist between state water agencies through operation of a liaison board or committee, or integration of the state water agencies under one department.

Rationale: It is difficult to provide the necessary agency support to carry out any new program, but even more difficult to introduce a program of management and control over an area of activity highly sensitive to government intervention. In addition to adding duties to agencies often already burdened with heavy programs, efforts to control irrigation return flow quality meets with strong resistance from an inflexible and institutionalized system of property rights to the use of water in which the state water quantity agency often maintains a close relationship with the water users. The result is potential polarization between the state agency carrying out water quality control and the state water quantity agency. However, because of the interdependence of water quantity and quality, particularly as a natural process in water applied to irrigation, it is inconsistent to promote the goals of P.L. 92-500 and not promote the coordination or integration of agencies charged with carrying out water quantity and quality control.

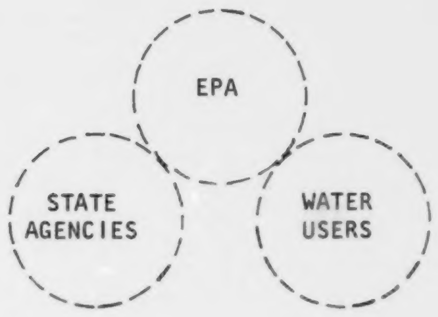
Precedent: In 1969, California combined the water quality and quantity agencies under the Porter-Cologne Act in order to attempt specifically to manage the resource in a rational manner. In 1972, Washington created the Department of Ecology which encompasses all three of the primary water functions; namely, water administration, water quality control and water resources development. Texas, Oregon and Kansas are contemplating an integrated approach, while Oklahoma has chosen to utilize an advisory coordinating board to interface the various water activities of numerous state agencies.

EPILOGUE

Based upon discussions with state water quantity and quality personnel from all 17 western states, it is apparent that most states feel a real credibility gap exists between the Environmental Protection Agency and the state agencies; that in those states where the state agencies attempted to implement the federal program, a credibility gap developed between the water users and the state agency; and, in several states the personnel expressed the opinion that EPA let them down by backing off after they attempted to carry out a control approach they did not agree with in the first place. In nearly every state, the water user organizations and individuals have polarized to combat the imposition of uncertain regulation over their possible water use. A permit concept is nothing new to them and they know that eventual control can emanate from an initially harmless permit.

For this reason, the current relationships between the three principals can be graphically described as:

Polarization



Missing are the prime ingredients of credibility and understanding. It is considered necessary:

1. that public officials responsible for carrying out laws appreciate the position of the water users and the nature of irrigated agriculture; and

2. that water users appreciate the water quality problems caused and the often awesome responsibilities and duties of the federal and state water officials in carrying out the legislative mandates.

If water users and state and federal agencies will embark upon a cooperative undertaking, a tripartite relationship can evolve that will instill credibility and achieve improved water quality. This would once again get those directly involved with water use and with administration of laws working together and not through advocates. The tripartite relationship can develop if personal objectives and discipline orientations are not allowed to constrain a casual and flexible approach. A cooperative approach will facilitate the implementation of an action program:

Tripartite Relationship

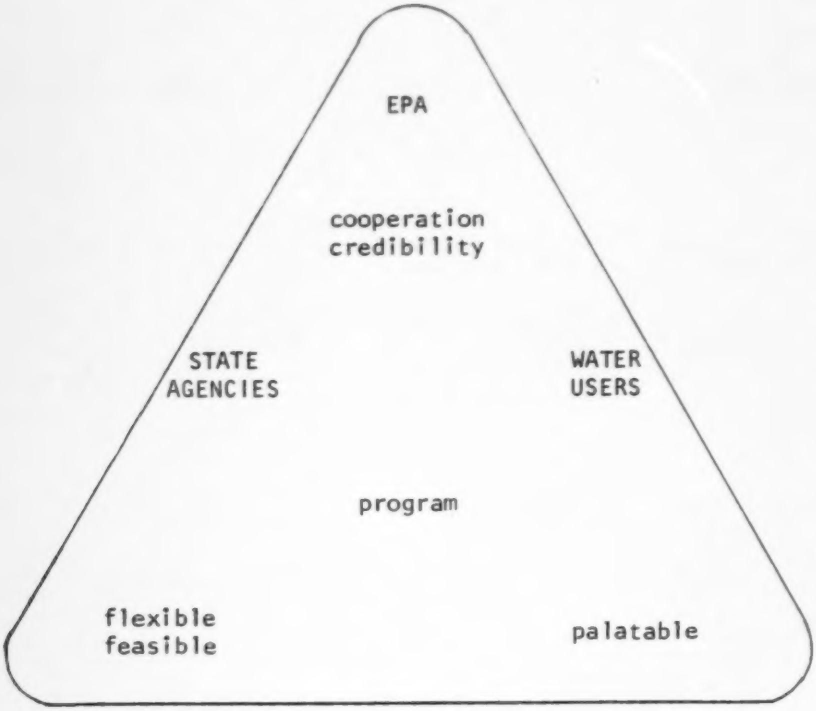
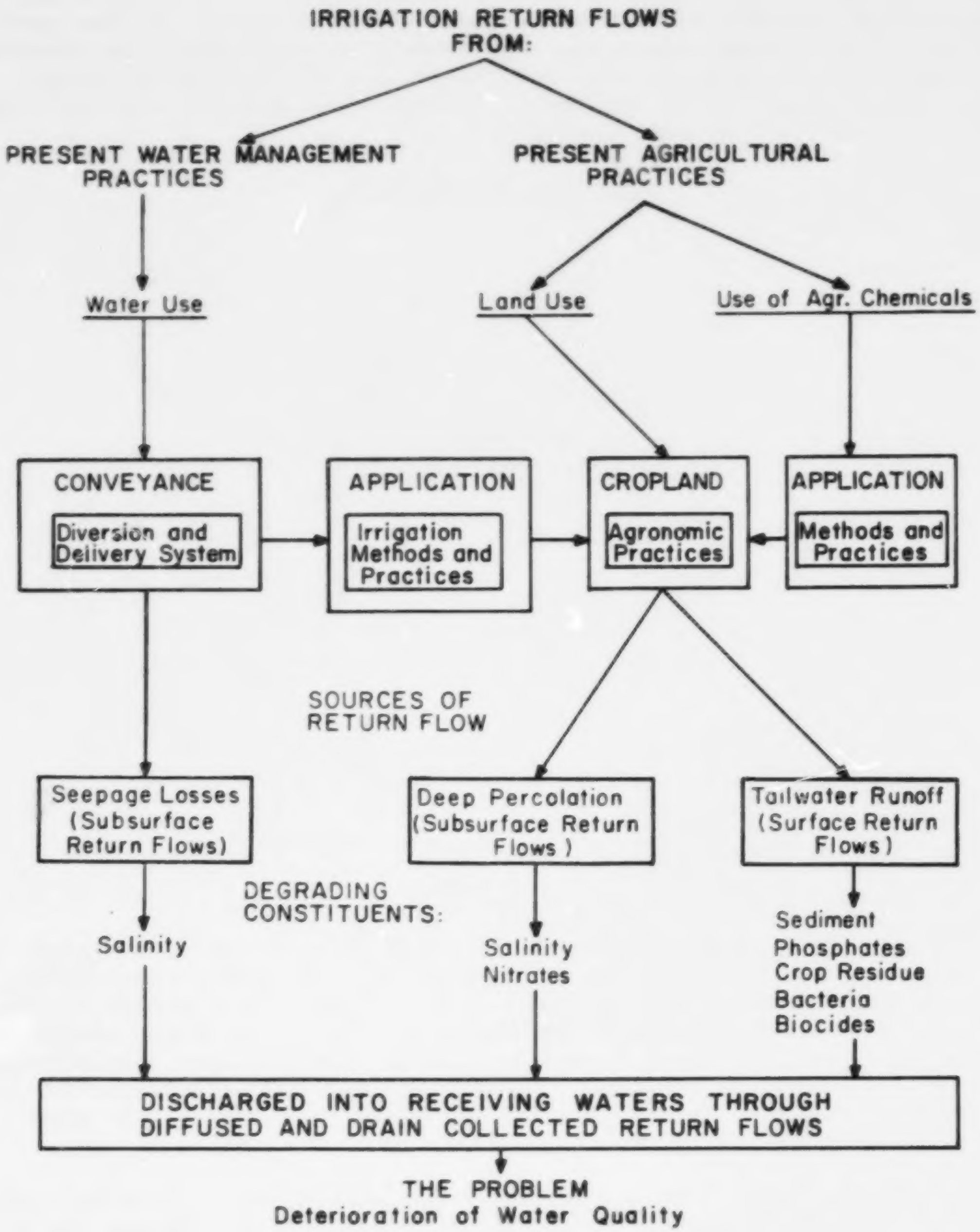


Figure 19 illustrates the complex situation faced by public officials and water users. To achieve the highly desirable goals of cleaner water called for by the Federal Water Pollution Control Act of 1972 (P.L. 92-500), it is necessary to assess realistically the specific nature and problems caused by surface and subsurface return flows from irrigated agriculture. Present water management and agricultural practices create irrigation return flows from the conveyance system and cropland that may have a degrading effect upon water quality in the receiving waters.

Irrigation return flows can be influenced to eliminate successfully controllable degraded discharges from irrigated agriculture and improve the quality of our nation's waters affected by such discharge. But end-of-pipe treatment is not the feasible solution. An Influent Control Approach is recommended based upon the conclusion that:

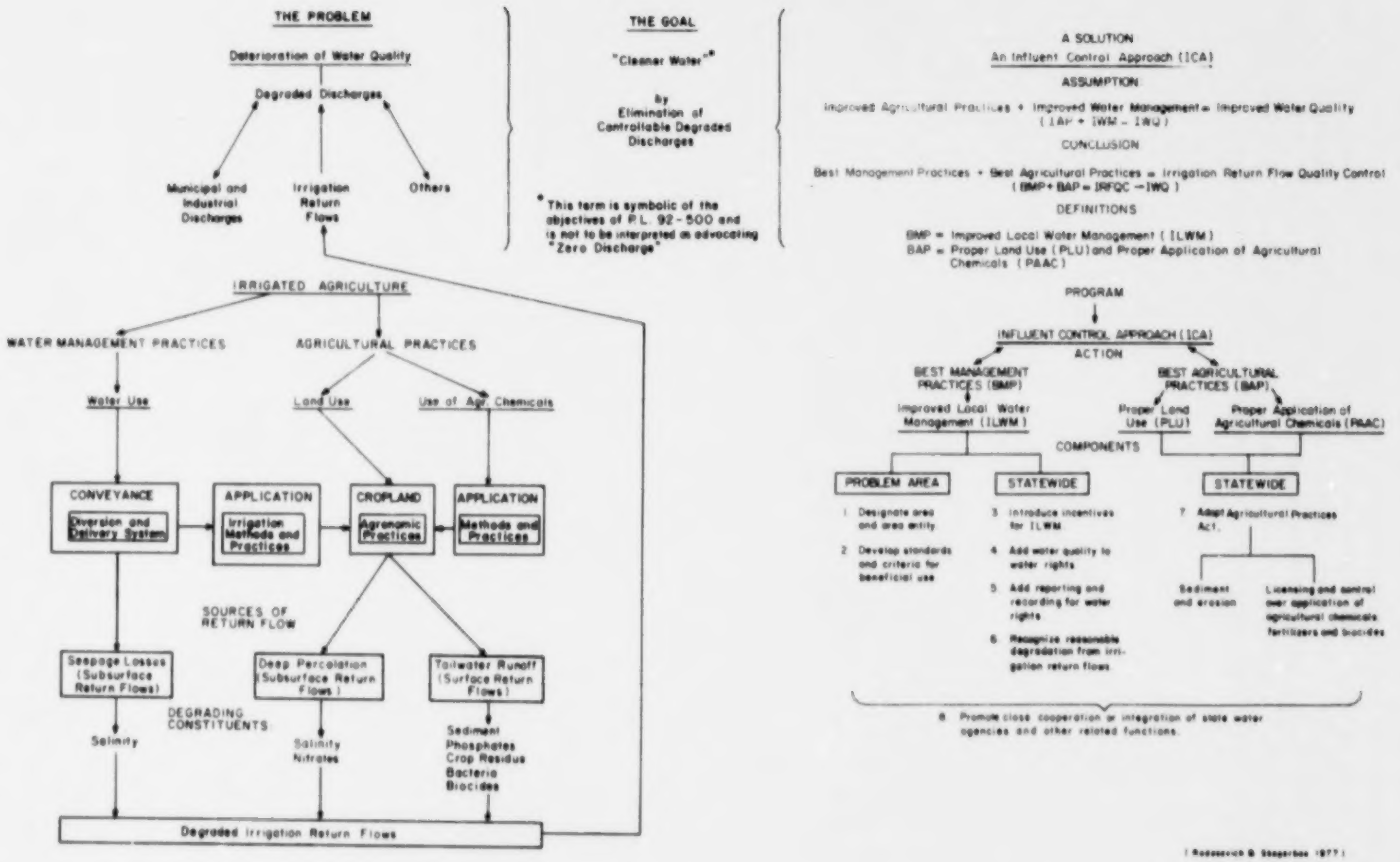
BMP + BAP = IRFWC ⟶ IWQ ⟶ Cleaner Water.


IRRIGATION RETURN FLOWS
FROM:
PRESENT WATER MANAGEMENT PRACTICES
PRESENT AGRICULTURAL PRACTICES
Water Use
Land Use
Use of Agr. Chemicals
CONVEYANCE
Diversion and Delivery System
APPLICATION
Irrigation Methods and Practices
CROPLAND
Agronomic Practices
APPLICATION
Methods and Practices
SOURCES OF RETURN FLOW
Seepage Losses (Subsurface Return Flows)
Deep Percolation (Subsurface Return Flows)
Tailwater Runoff (Surface Return Flows)
DEGRADING CONSTITUENTS:
Salinity
Salinity
Nitrates
Sediment
Phosphates
Crop Residue
Bacteria
Biocides
DISCHARGED INTO RECEIVING WATERS THROUGH DIFFUSED AND DRAIN COLLECTED RETURN FLOWS
THE PROBLEM
Deterioration of Water Quality

(Radosevich & Skogerboe 1977)

Figure 19: The Irrigation Return Flow Quality Problem

Figure 20 provides a summary rendition of the water quality goal, problems and an approach to irrigation return flow quality control. But regardless of how the goals are articulated, problems identified and assessed, and resolving approaches formulated, the mark of success in the efforts expended will depend upon the usefulness and implementability of the results. The challenge is here and becoming more pronounced as time goes on. But it is important that steps taken to meet the challenge be positive and productive.


THE PROBLEM
Deterioration of Water Quality
Degraded Discharges
Municipal and Industrial Discharges
Irrigation Return Flows
Others
IRRIGATED AGRICULTURE
WATER MANAGEMENT PRACTICES
AGRICULTURAL PRACTICES
Water Use
Land Use
Use of Agr. Chemicals
CONVEYANCE
Diversion and Delivery System
APPLICATION
Irrigation Methods and Practices
CROPLAND
Agronomic Practices
APPLICATION
Methods and Practices
SOURCES OF RETURN FLOW
Seepage Losses (Subsurface Return Flows)
Deep Percolation (Subsurface Return Flows)
Tailwater Runoff (Surface Return Flows)
DEGRADING CONSTITUENTS
Salinity
Salinity
Nitrates
Sediment
Phosphates
Crop Residue
Bacteria
Biocides
Degraded Irrigation Return Flows
THE GOAL
"Cleaner Water"*
by
Elimination of Controllable Degraded Discharges
* This term is symbolic of the objectives of P.L. 92-500 and is not to be interpreted as advocating "Zero Discharge"
A SOLUTION
An Influent Control Approach (ICA)
ASSUMPTION
Improved Agricultural Practices + Improved Water Management = Improved Water Quality
(IAP + IWM = IWQ)
CONCLUSION
Best Management Practices + Best Agricultural Practices = Irrigation Return Flow Quality Control
(BMP + BAP = IRFQC → IWQ)
DEFINITIONS
BMP = Improved Local Water Management (ILWM)
BAP = Proper Land Use (PLU) and Proper Application of Agricultural Chemicals (PAAC)
PROGRAM
INFLUENT CONTROL APPROACH (ICA)
ACTION
BEST MANAGEMENT PRACTICES (BMP)
BEST AGRICULTURAL PRACTICES (BAP)
Improved Local Water Management (ILWM)
Proper Land Use (PLU)
Proper Application of Agricultural Chemicals (PAAC)
COMPONENTS
PROBLEM AREA
STATEWIDE
STATEWIDE
1 Designate area and area entity
2 Develop standards and criteria for beneficial use
3 Introduce incentives for ILWM
4 Add water quality to water rights
5 Add reporting and recording for water rights
6 Recognize reasonable degradation from irrigation return flows
7 Adopt Agricultural Practices Act.
Sediment and erosion
Licensing and control over application of agricultural chemicals fertilizers and biocides
8 Promote close cooperation or integration of state water agencies and other related functions.

(Radosevich & Skogerboe 1977)

Figure 20: Achieving Irrigation Return Flow Quality Control Through Improved Legal Systems

REFERENCES

_____. A Review of the Laws Forbidding the Pollution of Inland Waters in the United States. U.S.G.A. Water Supply Paper No. 152, 2nd Edition. U.S. G.P.O., Washington, D.C., 1905.

_____. A Water Policy for the American People, Vol. 1. Report of the President's Water Resources Commission, U.S.G.P.O., Washington, D.C., 1950.

Anderson, Kathe. Memorandum. New Draft of the Proposed Regulations for General Permits. U.S.E.P.A., Office of Enforcement, August 4, 1976.

Baker, T. L., et al. Water for the Southwest: Historical Survey and Guide to Historic Sites. A.S.C.E. Publication No. 3, A.S.C.E., New York, New York, 1973.

_____. Bibliography on Legal and Regulatory Aspects of Water Pollution Control and Abatement, Part I--Abstracts, Part II--Subject Index, PB 217-493 and PB 217494, by Center of Competence for Eastern Water U.S. Water Law, Published by National Technical Information Service, Springfield, Va., 22151, September 1972.

Bromely, D. W., A. S. Schmid and W. B. Lard. Public Water Resource Project Planning and Evaluation: Impacts, Incidence and Institutions. Working Paper No. 1, Center for Resource Policy Studies and Programs, University of Wisconsin, Madison, September 1971.

Carlson, J. "Has the Doctrine of Appropriation Outlived its Usefulness?" 19th Annual Rocky Mountain Mineral Law Institute Journal, 1974.

Carter, D. L. and J. A. Bondurant. Control of Sediments, Nutrients and Absorbed Biocides in Surface Irrigation Return Flows. EPA-600/2-76-237, Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma, October 1976.

Clark, R. E. (editor). Waters and Water Rights. Allen Smith Co., Indianapolis, Indiana. Volumes 2 and 3 (1967), 4 (1970), 5 and 6 (1972), and 7 (1976).

Dewsnup, R. L. and D. W. Jensen (editors). A Summary Digest of State Water Laws. National Water Commission, Arlington, Va., 1973.

Dickerman, A., G. E. Radosevich and K. C. Nobe. Foundations of Federal Reclamation Policies: An Historical Review of Changing Goals and Objectives. NRE-8, Department of Economics, Colorado State University, January 1970.

Dolgin, E. L. and T. G. P. Guilbert (editors). Federal Environmental Law. Environmental Law Institute, West Publishing Co., St. Paul, Minnesota, 1974.

Gates, P. W. History of Public Land Law Development. Prepared for the Public Land Law Review Commission, U.S.G.P.O., Washington, D.C., November 1968.

Gindler, B. J. "Water Pollution and Quality Controls." Vol. 3, Waters and Water Rights, R. E. Clark (editor). Allen Smith Co., Indianapolis, Indiana, 1967.

Gindler, B. J. and M. B. Holburt. "Water Salinity Problems: Approaches to Legal and Engineering Solutions." Natural Resources Journal, Vol. 9, No. 3, July 1969.

Goldfarb, W. "Better Than Best: A Crosscurrent in the Federal Water Pollution Control Act Amendment of 1972." Land and Water Law Review, Vol. XI, No. 1, 1976.

Glick, T. F. The Old World Background of the Irrigation System of San Antonio, Texas. Southwestern Studies Series, Monograph No. 35, University of Texas at El Paso, Texas, 1972.

Hart, G. W. Institutions for Water Planning. PB 204244, National Technical Information Service, Springfield, Va. 22151, 1972.

_____. History of the Implementation of the Recommendations of the Senate Select Committee on Natural Water Resources. Committee on Interior and Insular Affairs, U.S. Senate. U.S.G.P.O., Washington, D.C, 1969.

Hutchins, W. Water Rights Laws in the 19 Western States. Miscellaneous Publication No. 1206, U.S. Department of Agriculture, Washington, D.C. Vol. I (1971), and Vol. II (1974).

_____. Irrigated Agriculture: Capabilities and Costs of Water Pollution Abatement Technology. Prepared by Toups Corp., for National Commission on Water Quality, PB 250 016, March 1976.

Irwin, W. A., et al. Enforcement: Institutional Assessment--The Federal Water Pollution Control Act of 1972. Vols. I and II, prepared by Environmental Law Institute for National Commission on Water Quality, PB 246-321, NTIS, October 1975.

Kinney, C. S. Kinney on Irrigation and Water Rights. Vols. I to IV, Bender-Maas Co., San Francisco, 1912.

Law, James P., Jr. *National Irrigation Return Flow Research and Development Program*. EPA Water Pollution Control Research Series, Report 13030 GJS, December 1971.

Lieberman, E. *The Water Resources Council*. PB 211-443, National Technical Information Service, Springfield, Virginia 22151, 1972.

Lieber, Harvey. *Federalism and Clean Waters*. Lexington Books, 1975.

Lovato, P. *Las Acequias del Norte*. Technical Report No. 1, Four Corners Regional Commission, Taos, New Mexico, 1974.

McFarland, J. W. "Ground Water Management and Salinity Control: A Case Study in Northwest Mexico." 57 *Amer. J. of Agr. Econ.* No. 3, August 1975, p. 456.

Maas, A. and D. C. Major. "The Objectives of Water Policy and Related Institutional Problems." *Proceedings: Interregional Seminar on Current Issues of Water Resources Administration*. Background Document 11, ESA/RT/Meeting V, Center for Energy, Resources and Transportation, United Nations, New York, New York, 1973.

Mead, E. *Irrigation Institutions*. Macmillan Co., New York, 1903.

Meyers, C. J. and A. D. Tarlock. *Water Resource Management*. Foundation Press, Inc., Mineola, New Jersey, 1971.

_____. *The Nation's Water Resources*. Water Resources Council, U.S.G.P.O., Washington, D.C., 1968.

Pelz, R. K. (editor). *Federal Reclamation and Related Laws Annotated. Vol. I, II and III.* U.S. Department of the Interior, U.S.G.P.O., Washington, D.C., 1972.

_____. *Permit Program, The: Institutional Assessment, the Water Pollution Control Act of 1972*. By Energy and Environmental Analysis, Inc., for National Commission on Water Quality. Report No. PB 244-805, National Technical Information Service, Springfield, Virginia, August 1975.

_____. *P.L. 92-500: Certain Recommendations of the Water Pollution Control Federation for Improving the Law and Its Administration*. Water Pollution Control Federation, Washington, D.C., October 1974.

_____. *Proceedings: Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and its Tributaries*. 7th Session of Colorado River Enforcement Conference, February 25-27, 1972. Vols. 1 and 2, Las Vegas, Nevada, EPA, Washington, D.C., 1972.

_____. *Proceedings: Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and its Tributaries*. 7th Sesstion of Colorado River Enforcement Conference, Recommended, April 26-27, 1972, Denver, Colorado, EPA, Washington, D.C., 1972.

Radosevich, G. E. "State Legal and Institutional Arrangements for Water Resources Development." State Water Planning: How Can the Public Participation? Proceedings of Western State Seminar, Publication No. IV, Western Regional Extension Committee, Natural Resources and Environmental Policies, Boise, Idaho, January 1971, pp. 50-63.

Radosevich, G. E. "Water Right Changes to Implement Water Management Technology." Proceedings of National Conference on Managing Irrigated Agriculture to Improve Water Quality. Colorado State University, Fort Collins, Colorado, May 1972.

Radosevich, G. E., W. Sutton, "Legal Problems and Solutions to Surface-Groundwater Management." The High Plains: Problem of Semi-arid Environments, D. P. MacPhail (editor). American Association for Advancement of Science, 1972.

Radosevich, G. E., E. C. Vlachos, G. V. Skogerboe. "Constraints in Water Management on Agricultural Lands." Water Resources Bulletin, Vol. 9, No. 2, April 1973, pp. 352-359.

Radosevich, G. and D. Daines. "Water Law and Administration in the United States." Proceedings: International Conference on Global Water Law Systems, Vol. II, pp. 453-502. Colorado State University, Fort Collins, January 1976.

Radosevich, G. E. Western Water Laws and Irrigation Return Flow Quality. Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma, 1977.

Reitze, A. W. Environmental Law, 2nd Edition, Chapter 4, "Water Pollution." North American International, Washington, D.C., 1972.

Russell, J. D. and J. R. Vinient. Alternatives for Salinity Management in the Colorado River Basin, unpublished article, 1972.

_____. Selected Legal References. Upper Colorado River Commission, Salt Lake City, Utah. Vol. I (1965), Vol. II (1971) and Vol. III (1975).

_____. Senate Report: Federal Water Pollution Control Act Amendments of 1971, U.S. Senate Report No. 92-414, Accompanying S.2770, 92nd Congress, 1st Session. U.S.G.P.O., Washington, D.C., 1971.

Sheaffer, John R. "Pollution Control: Wastewater Irrigation." 21 Depaul Law Review, p. 987, 1972.

Skogerboe, G. V. "The Importantce of Water Law in the Design and Operation of Irrigation Systems for Improved On-Farm Water Management." Proceedings: International Conference on Global Water Law Systems, Vol. III, pp. 957-972, Colorado State University, January 1976.

Skogerboe, Gaylord V. and Law, James P., Jr. Research Needs for Irrigation Return Flow Quality Control. EPA Water Pollution Control Research Series, Report 13030, November 1971.

Skogerboe, G. V., G. E. Radosevich and E. Vlachos. *Consolidation of Irrigation Systems: Phase I Engineering, Legal and Sociological Constraints and/or Facilitators*. Completion Report No. 52, Environmental Resources Center, Colorado State University, June 1973.

_____. *Stream Pollution: A Digest of Judicial Decisions and a Compilation of Legislation Relating to the Subject*. U.S. Public Health Service Bulletin No. 87, U.S.G.P.O., Washington, D.C., 1918.

Sylvester, Robert O. and Robert W. Seabloom. "Quality and Significance of Irrigation Return Flow." *Journal of the Irrigation and Drainage Division*, ASCE, Vol. 89, No. IR3, pp. 1-27, September 1963.

Thomas, G. *The Development of Institutions Under Irrigation*. Macmillan Co., New York, 1920.

Train, R. E. "EPA and Agriculture: Establishing a Partnership." *Journal of Soil and Water Conservation*. Vol. 3, No. 1, p. 33, January-February 1975.

Trelease, Frank J. *Federal-State Relations in Water Law*. Legal Study No. 5. A Report to the National Water Commission, PB 203-600, NTIS, 1971.

Trelease, F. J. *Water Law*. West Publishing Co., St. Paul, Minnesota, 1974.

U.S. Environmental Protection Agency. *The Mineral Quality Problem in the Colorado River Basin*. Summary Report and Appendices A, B, C, D, Regions VIII and IX (1971).

Utah State University Foundation. *Characteristics and Pollution Problems of Irrigation Return Flow*. EPA (FWQA), Robert S. Kerr Water Research Center, Ada, Oklahoma, 1969.

Vlachos, E. V., G. E. Radosevich, G. V. Skogerboe, and P. Huszar. *Merger of Irrigation Systems for Water Management*. Compilation Report, Environmental Resources Center, Colorado State University, 1977.

Walker, W. R. *Assessment of Irrigation Return Flow Models*. EPA 600/2-76-219, Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma, October 1976.

_____. *Water Quality*. Staff Report to the National Commission on Water Quality, U.S.G.P.O., Washington, D.C., 1976.

_____. *Westwide Study Report on Critical Water Problems Facing the Eleven Western States*. U.S. Department of the Interior, Washington, D.C., April 1975.

Wilcox, Lloyd V. "Salinity Caused by Irrigation." *Journal of the American Water Works Association*, Vol. 54, No. 2, pp. 217-222, February 1962.

APPENDIX A

1. ARIZONA

1.1 SUMMARY OF WATER QUALITY LAWS

1.1.1 Background

In 1962, the State Department of Health enacted rules and regulations for sewerage systems and waste treatment works (see Environment Reporter, State Water Laws, Vol. 2, §711.0501 et. seq.). Arizona's water pollution control laws were enacted in 1967 and received a great deal of modification in 1975. This legislation designated the Department of Health Services as the state water pollution control agency for all purposes of the Federal Water Pollution Control Act (A.R.S. §36.1852).[1]

In 1968, the Water Quality Control Council adopted implementation and surveillance standards (Environment Reporter, State Water Laws, Vol. 1, §711.0541 et. seq. adopted July 18, 1968, effective Aug. 8, 1968). On Dec. 10, 1973 the Council adopted water quality standards for surface waters in Arizona (Environment Reporter, State Water Laws, Vol. 1, §711.0541 et. seq. adopted Dec. 10, 1973, effective Dec. 21, 1973). As of this date, Arizona has not been accepted by the Environmental Protection Agency into the National Pollutant Discharge Elimination System.[2]

1.1.2 Policy

It is the policy of the Department of Health Services to require:

> by July 1, 1977 the application of the best practicable control technology currently available and by July 1, 1983 the application of the best available technology economically achievable in treatment and control of all waste sources (Arizona Water Quality Standards §R9-21-101, see Environment Reporter, State Water Laws, Vol. 1, §711.0541, et. seq.).

Arizona also has a statement of policy regarding antidegradation, which states:

> Waters whose existing quality is better than the established standards shall not be lowered in quality unless and until it has been affirmatively demonstrated to the State Water Quality Control Council that such change is justifiable as a result of necessary economic and social development and will not interfere with or become injurious to any assigned uses made of, or presently possible in, such waters. Any industrial, public or private project or development which could constitute a new source of pollution or an increased source of pollution to high quality waters will be required, as part of the initial project design, to provide the best available technology economically achievable (Arizona Water Quality Standards, §R9-21-102).

On May 5, 1976, Arizona adopted a policy statement regarding salinity which reads as follows:

> A. The flow weighted average annual salinity in the lower main stem of the Colorado River System shall be maintained at or below the average value found during 1972, while allowing the Colorado River Basin States to continue to develop their compact apportioned waters.
> B. The plan of implementation for salinity control of the Colorado River System is the plan prepared by the Colorado River Salinity Control Forum, 'Water Quality Standards for Salinity including Numeric Criteria and Plan of Implementation for Salinity Control-Colorado River System-June 1975 and supplement, August 26, 1975,' adopted by all seven Basin States.
> C. Salinity levels in the lower main stem may temporarily increase above the 1972 levels if control measures to offset the increases are included in the plan of implementation. However, compliance with the 1972 levels shall be a primary consideration.
> D. The flow weighted annual salinity for the 1972 year are:
>
> | | |
> |---|---|
> | below Hoover Dam | 723 mg/l |
> | below Parker Dam | 747 mg/l |
> | Imperial Dam | 879 mg/l |
>
> E. The plan of implementation shall be reviewed and modified as appropriate from time to time, but at least once in three years. At the same time, the numeric salinity standards consistent with the plan so that the Colorado Basin States may continue to develop their compact apportioned water while providing the best practicable water quality in the Colorado River Basin. This may necessitate revision of this regulation.
> F. The mechanism for interstate cooperation for salinity control is the Colorado River Basin Salinity Control Forum (Arizona Water Quality Standards, §R9-21-103).

Amendments to Arizona's water pollution control laws in 1975 resulted in the following definitions. Pollution is defined by these amendments as "the man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water" (A.R.S. §36-1851(12), 1976 Supp.).

In defining pollutant, Arizona statutes include "agricultural waste, including irrigation and drainage waters, discharged into water" (A.R.S. §36.1851(11), 1976 Supp.). However, the definition of wastes specifically excludes "agricultural irrigation and drainage waters for which water quality standards shall have been established pursuant to this article" (A.R.S. §36.1851(15), 1976 Supp.)

Waters of the state are defined to mean:

> all waters within the jurisdiction of this state including all streams, perennial or intermittent, lakes, ponds, impounding reservoirs, marshes,

---

[1] See 33 U.S.C.A., 1251 et. seq.

[2] See letter from EPA Region IX, R.L. O'Connell, Director of the Enforcement Division to James D. Goff, Arizona Department of Health Services, November 5, 1975.

> watercourses, waterways, wells, springs irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, situated wholly or partly within or bordering upon the state (A.R.S. §1851(16), 1976 Supp.).

In statutes dealing with Natural Resource Conservation Districts, the legislature has set forth its policy to:

> provide for the restoration, and conservation of lands and soil resources of the state and the control and prevention of soil erosion, and thereby to conserve natural resources, conserve wildlife, protect the tax base, protect public lands and in such manner to protect and promote the public health, safety and general welfare of the people (A.R.S. §45.2001, 1976 Supp.).

1.1.3 Classification

Waters in Arizona are classified as either "domestic water supply," "full body contact recreation," "partial body contact recreation," "fish, wildlife and other aquatic and semiaquatic life," "agricultural and industrial" and "aesthetic use" according to their designated beneficial uses (Arizona Water Quality Standards, §R9-21-204).

1. 'Domestic water supply' is a surface water which is intended for use as a potable water supply. Treatment by coagulation, sedimentation, filtration, disinfection and other treatments may be required to yield a finished water suitable for human consumption. After such treatment, this water may be used for domestic drinking water supply, food processing, liquid ingredient in beverages, and other similar uses.
2. 'Full body contact recreation' is a surface water which is intended for uses where the human body may come in direct contact with the raw water to the point of complete submergence. The water may be ingested accidentally and certain sensitive body organs, such as the eyes, nose, etc., may be exposed to the water. Although the water may be ingested accidentally, it is not intended to be used as a potable supply unless acceptable treatment is applied. This water may be used for swimming, water skiing, skin diving, and other similar activities.
3. 'Partial body contact recreation' is a surface water where the human body may come in direct contact with the water, but normally not to the point of complete submergence. It is very unlikely that this water will be ingested, nor will critical organs such as eyes, ears and nose normally be exposed to the water. This water may be used for fishing, hunting, trapping, boating, and other similar activity.
4. 'Fish, wildlife, and other aquatic and semiaquatic life' is a surface water suitable for the growth and propagation of fish, waterfowl, fur-bearers, other aquatic life, semiaquatic life, and wildlife. This water may be used for a cold water fishery, warm water fishery, wildlife habitat and other similar uses.
5. 'Agricultural and industrial' is surface water which is suitable for general agricultural and industrial usage.
6. 'Aesthetic use' is surface water that is appealing to the senses (Arizona Water Quality Standards, §R9-21-204).

Beneficial use is divided into primary and incidental uses (Arizona Water Quality Standards, §R9-21-205). A primary beneficial use is a recognized use of water for purposes of designating applicable specific use standards. The exercise of a primary beneficial use which interferes with the attainment of standards associated with an incidental use does not violate water quality control regulations (Arizona Water Quality Standards, §R9-21-205(c)).

1.1.4 Standards

The Water Quality Control Council is given the statutory authority to promulgate water quality standards which are designed to protect surface waters for designated uses (A.R.S., §36.1857, Arizona Water Quality Standards, §R9-21-201). In so doing, the Council must consider the following:

1. The criteria established by the Federal Water Pollution Control Act, as amended, including the Water Quality Act of 1965.
2. The protection of the public health.
3. The size, depth, surface area covered, volume, direction, and rate of flow, stream gradient, and temperature of water.
4. The character and uses of the land area bordering such waters.
5. The uses which have been made, are being made, or may be made of such waters for every public or private purpose.
6. The disposal of sewage and all wastes.
7. The extent of pollution resulting from natural causes, including mineral and chemical characteristics.
8. The extent to which suspended solids, colloids, or a combination of solids with other suspended substances may be permitted.
9. The extent to which bacteria and other biological organisms may be permitted.
10. The amount of dissolved oxygen that is to be present and the extent of the oxygen demanding substances which may be permitted.
11. The extent to which toxic substances, chemicals, or deleterious conditions may be permitted.
12. The need for standards for effluents from disposal systems.
13. Whether a standard that is to be applicable to discharges into flowing water or underground water basins would be written in such a way that the degree of pollution tolerated or treatment required will be dependent upon the volume of flow of the receiving water and the extent to which the discharge is diluted therein, or the volume of water in such underground water basin.
14. The degree of treatment that will be required for each of the various types of discharges. In formulating any applicable standard pertaining to waste discharge, the Council shall be guided by the degree of treatment or control that is required for the water quality enhancement that is necessary for the present and future beneficial uses of such water.
15. The degree to which any particular waste is amenable to treatment and the cost of such treatment, and shall take into consideration the benefit to the state or the

> *advantage to its people by the prevention, abatement and control of water pollution as compared to the resultant financial burden on the water user or the unreasonable taking of his property.*
> 16. *In formulating any applicable standard pertaining to agricultural irrigation and drainage waters, the Council shall be guided by the principle that such waters are put to beneficial use within the state for the irrigation of lands or become return flows to the waters of the state and subsequently reused, and that such standards shall not diminish the water available for such uses nor deprive the state of such water* (A.R.S. §36.1857 A, emphasis added).

The above statute further commands the Council to:

> 1. Not require any present or future appropriator or user of water to divert, cease diverting, exchange, cease exchanging, store, cease storing, or release any water for the purpose of controlling pollution in the waters of the state.
> 2. Exclude from water quality standards wholly private waters closed to all public uses and not discharging into or polluting any other waters of the state (A.R.S. §36.1857 B).

The Arizona Legislature has recognized that no single standard of quality or the amount of pollutants that is discharged into the waters of the state is applicable to all streams, or to different segments of the same stream, or to different discharges into waters (A.R.S. §36.1857 A).

Water quality standards in Arizona are applicable to all surface waters of the State except those wholly private waters which are closed to all public uses and not discharged into or polluting any other waters of the State (*Arizona Water Quality Standards*, §R9-21-201). These standards are divided into general and specific categories and are applicable to all surface waters.

General standards provide that:

> All surface waters shall be:
> 1. Free from substances attributable to domestic or industrial waste or other controllable sources that will settle to form sludge or bottom deposits in amounts sufficient to be unsightly, putrescent or odorous, or in amounts sufficient to interfere with any beneficial use of the water.
> 2. Free from floating debris, oil, grease, scum, and other floating materials attributable to domestic or industrial waste or other controllable sources in amounts sufficient to be unsightly or in amounts sufficient to interfere with any beneficial use of the water.
> 3. Free from materials attributable to domestic or industrial waste or other controllable sources in amounts sufficient to produce taste or odor in the water or detectable off-flavor in the flesh of fish, or in amounts sufficient to change the existing color, turbidity or other conditions in the receiving stream to such degree as to create a public nuisance, or in amounts sufficient to interfere with any beneficial use of the water.
> 4. Free from toxic, corrosive, or other deleterious substances attributable to domestic or industrial waste or other controllable sources at levels or combinations sufficient to be toxic to human, animal, plant or aquatic life or in amounts sufficient to interfere with any beneficial use of the water (*Arizona Water Quality Standards*, §R9-21-206).

Specific standards are divided into toxic substances and radioactivity. These specific standards state that:

> Toxic substances shall be kept below levels which are deleterious to human, animal, plant or aquatic life, or in amounts sufficient to interfere with the beneficial use of the water. As a minimum evaluation for the presence of toxic substances, a water shall be evaluated by use of a 96-hour bioassay, guided by the document 'Standard Methods for the Examination of Water and Wastewater.' The survival of the test organisms shall not be less than that in controls which utilize appropriate experimental water.
> The concentration of radioactivity in surface waters of the State shall not:
> a. Exceed those limits established by the regulations for the control of ionizing radiation adopted by the State of Arizona Atomic Energy Commission.
> b. Result in the accumulation of radioactivity in edible plants, animals, and aquatic life that present a hazard to consumers.
> c. Be harmful to aquatic life.
> Since any human exposure to ionizing radiation is undesirable, the concentration of radioactivity in surface waters will be maintained at the lowest practicable level (*Arizona Water Quality Standards*, §R9-21-207).

Arizona's water quality standards provide that if the entire flow of a watercourse, that would otherwise be dry at that time and place, is effluent from agricultural irrigation return flow, the Water Quality Control Council has the authority to hold water quality standards inapplicable if the Council has found that the flow does not present a substantial danger to the health of the public (*Arizona Water Quality Standards*, §R9-21-210A).

Water quality standards do not apply:

> to the collection, return or drainage of agricultural irrigation return flow, excess or tailwaters to canals, laterals or other man-made irrigation water delivery facilities within an irrigation system, or chemical maintenance of irrigation system where agriculture is the only designated primary beneficial use (*Arizona Water Quality Standards*, §R9-21-210B).

The State Board of Health is given the authority to prescribe waste discharge requirements under A.R.S. Section 36.1855, *Arizona Water Quality Standards*, Section 6-2-7.3. These discharge requirements must be in keeping with the above stream standards. These regulations may include effluent standards which will meet stream standards and protect the public health (*Arizona Water Quality Standards*, §6-2-7.3).

1.1.5 Permit System

A permit, issued by the Director, is required for the discharge of any pollutant or combination of pollutants into waters of the state (A.R.S. §36.1859(A)). From the definition of pollutant it appears that a permit may be required before discharging agricultural waste including irrigation and drainage waters (see A.R.S. §36.1851(11)). The permit may specify a monitoring schedule which requires the discharger to periodically report various technical data (Ibid.). Further, a disposal system, or an increase in the volume or strength of any waste, cannot occur unless the permit is modified (Ibid.).

A permit is defined as "a certificate or letter issued by the Director (of the Department of Health Services) stating the conditions and restrictions governing the discharge of a pollutant under this chapter" (A.R.S. §36.1851(8), 1976 Supp.).

In issuing a permit, the Director is guided by the principle that the waters of the state are to be put to beneficial uses and they become return flows which are subsequently reused and that such permits must not diminish the water available for beneficial uses nor deprive the state of such water (A.R.S. §36.1859 (C)).

A permit may be issued only after thirty days notice and an opportunity for a public hearing (A.R.S. §36. 1859). This notice must specify the waters to be affected. Notice of the hearing must be published at least three times before the hearing in a newspaper or newspapers of general circulation in the area for which such standards, provisions, rules or regulations are to be adopted. The first of these notices must be published at least thirty days before the hearing. A copy of the notice of hearing is mailed at least thirty days prior to such hearing to such municipalities, irrigation districts, agricultural improvement districts, water users associations, state franchised water companies and other persons whom the Council and Director deem may be affected, or who have requested notification of Council action (A.R.S. §1860 (A)).

A public hearing will be held if there is sufficient public interest, or if a hearing is required by the applicant or permittee (A.R.S. §1860(B)). Any interested persons may submit written comments or present oral testimony at the hearing (A.R.S. §1860(D) and (E)).

1.1.6 Sanctions and Enforcement Measures

Enforcement activities are mainly directed towards compliance with waste discharge requirements and are generally initiated at staff level (Arizona Water Quality Standards, §6-2-7.4). Correction of the problem is sought first of all by an informal discussion. If this fails to bring about adequate correction, the Department of Health Services will issue a written complaint which specifies the violation and orders the corrective action to be taken by the violator (Arizona Water Quality Standards, §6-2-7.4). The Department is given the statutory authority to issue orders to prohibit or abate discharges of wastes into the waters of the state (A.R.S. §1856(8)).

Whenever the Department finds, after proper notice and hearing, that any person is engaging in any act or practice which constitutes a violation of any order of the Council or Director, the Department will make an application, through the Attorney General, to the superior court for an order enjoining such act or practice. The superior court, after notice to the parties in interest, will then proceed to hear the matter and may issue an injunction or a restraining order in accordance with the Arizona rules of civil procedure and laws relating thereto. An appeal or a special writ may be taken from any such order of the court in the same manner as is provided in civil cases.

Furthermore, whenever the Department finds that any person is discharging or causing to be discharged into the waters of the state directly or indirectly any pollutant which in the opinion of the Department constitutes a clear, present, and immediate danger to the health of the public, the Department will issue written order to such person that he must immediately discontinue such discharge of such pollutant into the waters of the state, and whereupon such person shall immediately discontinue such discharge. If such person, notwithstanding such order, continues the discharge of such pollutant into the waters of the state, the Department will make application, through the Attorney General, to the superior court of this state for the county in which the discharge is occurring for a temporary restraining order, preliminary injunction or permanent injunction as provided in the Arizona rules of civil procedure. Such action in such superior court shall be given precedence over all other matters pending in such court. An appeal or a special writ may be taken from any such order of the court in the same manner as is provided in civil cases (A.R.S. §36.1864).

Arizona statute Section 36.1858 makes it unlawful for any person:

1. To discharge any wastes into the waters of the state and thereby reduce the quality of such waters below the water quality standards established therefor by the Council in violation of an order issued pursuant to §36.1854.
2. To discharge any agricultural, irrigation or drainage waters into waters of the state and thereby reduce the quality of such waters below the water quality standards established therefor by the Council in violation of an order issued pursuant to §36.1854.
3. To discharge pollutants into the waters of the United States within this state except in compliance with a permit therefor as may be required by the Director under the provisions of this article and any rules and regulations promulgated hereunder (A.R.S. §36.1854, 1976 Supp.).

Civil penalties are provided for in Section 36.1864.01 of the Arizona statutes. This statute provides that:

A. Notwithstanding the provisions of §13.101, any person who violates any provision of this article or of any permit, rule, regulation or order issued or promulgated pursuant to this article shall be punished by a fine in an amount not to exceed ten thousand dollars, or in the event of continuous discharge from a point source, not to exceed ten thousand dollars per day of such violation.

B. Notwithstanding the provisions of §13.101, actions to recover penalties under this section shall be brought by the Attorney General in the name of the state in the superior court of the county in which the violation occurred or in the county in which the Department maintains an office.

Any person who willfully or negligently discharges any pollutant into the waters of the United States within this state in violation of any statute, permit, rule or regulation is guilty of a misdemeanor and punishable by a fine not to exceed $25,000 (A.R.S. §36.1864.02A). If the discharge is continuous and from a point source, the fine is not to exceed $25,000 per day of the violation. Upon a second conviction, the maximum fine is raised to $50,000.

Knowingly making a false statement, representation or certification in any record, report, plan or other document which is required by any permit, rule, regulation or order subjects the violator to a fine not to exceed $10,000 or imprisonment for up to six months or both (A.R.S. §36.1864.02B). This same penalty applies if a person falsifies, tampers with, or knowingly renders inaccurate any monitoring device (Ibid.).

1.2 ADMINISTRATION OF THE LAWS

Pollution control is the responsibility of several state bodies in Arizona. Agencies who have responsibility in this area are the Arizona Water Commission, the State Land Department and the Department of Health Services. The activities of these agencies are loosely coordinated by the Water Quality Control Council (see Figure 1 for Council and Health Dept. organization).

The State Water Quality Control Council is made up of thirteen members. The Council consists of the Director of the Department of Health Services, a member of the State Game and Fish Commission, a member of the Oil and Gas Conservation Commission, the State Land Commissioner, a member of the Arizona Water Commission, the Dean of the Agricultural College of the University of Arizona, and seven citizens of the state who are appointed by the Governor (A.R.S. §36.1853).

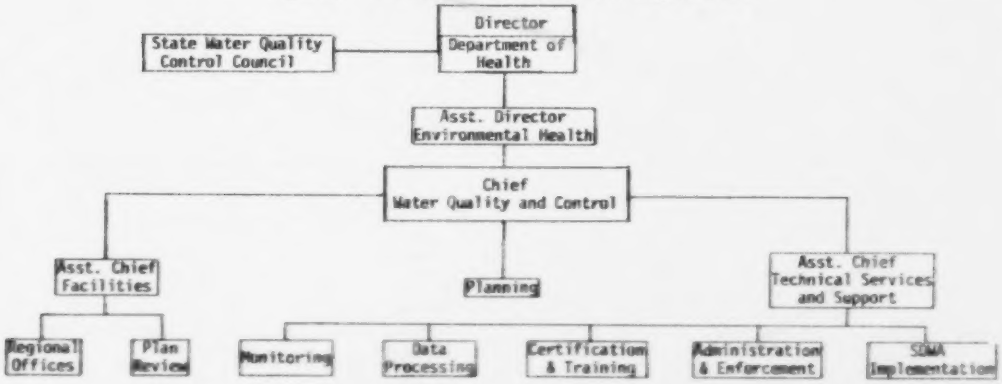
The Council exercises supervision and control over the establishment, review, revision or deletion of water quality standards (A.R.S. §36.1854 and 1857. (See Environment Reporter, State Water Laws, Vol. 1, for Arizona's Water Quality Standards). Further, the Council has the power to establish rules and regulations pertaining to effluent limitations, water quality related limitations, new source performance standards, toxic and pretreatment effluent standards, and the power to inspect and monitor the discharge of pollutants (A.R.S. §36.1854(5)).

Preservation and enhancement of water quality in Arizona is the primary function of the State Water Quality Control Council. The Council's implementation plan is a comprehensive program of surveillance, control of discharges to the rivers, enforcement and special activities relating to investigations, research coordination with other agencies concerned with water quality control, and support of a water augmentation program for the State.

The Council maintains an up-to-date list of pollution sources which require treatment and treatment facilities in need of expansion, which includes a list of the degrees of treatment needed to comply with water quality standards and time schedules of compliance.

The Council has recognized that some degradation in quality of water results from each beneficial use. Some forms of degradation, such as salt degradation, are irreversible in a practical and economical manner under present technology. The Council has also recognized the absolute need for return flows to the rivers to create a proper balance of water resource development in agricultural, municipal and other uses, and to fulfill requirements to downstream uses. Therefore, the Council authorizes return flows to the river even though the return flows might decrease the quality of the river water so long as such degradation is the necessary result of a reasonable use of the water. Because of this reasonable use, the quality of the waters of the State will continue to be degraded with respect to certain parameters at a given point on the river as more upstream users in other states and Arizona are added, and no single standard for any one parameter can be applied to all points in the river. Factors such as the quality of the water available to the beneficial user of river water, the type and efficiency of use, and the type of practical treatment methods available will determine how much the return flow will be degraded by each use. All future numerical standards set on the river reflect these facts. The Council also determines the allowable degradation resulting from each beneficial use, and after appropriate public hearings, sets specific stream standards downstream of such use. Emphasis on equitable apportionment of allowable degradation will be paramount in the determination of these numerical standards. Finally, the Attorney General has determined that jurisdiction to establish rules and regulations for the use of reclaimed waste water rests with the Council (Opinion Attorney General No. 75-5-L).

Figure 1. Arizona Water Quality Control Organizations


Director Department of Health
State Water Quality Control Council
Asst. Director Environmental Health
Chief Water Quality and Control
Asst. Chief Facilities
Planning
Asst. Chief Technical Services and Support
Regional Offices
Plan Review
Monitoring
Data Processing
Certification & Training
Administration & Enforcement
SDWA Implementation

The Director of the Department of Health Services is given the authority to establish a system of user charges as required by the Federal Water Pollution Control Act and to hold hearings in order to effectuate the enforcement of rules and regulations or when appealed by any person who was adversely affected by any order or denial of the Department (A.R.S. §36.1855).

The Department must advise, consult and cooperate with other state agencies and the federal government and develop comprehensive programs for the minimization, prevention, control and abatement of new or existing water pollution (A.R.S. §36.1856(2) and (4)). Further, the Department may issue, modify or revoke orders:

(a) Prohibiting or abating discharges of wastes into the waters of the state.

(b) Requiring the construction of new disposal systems or any parts thereof or the modification, extension or alteration of existing disposal systems or any parts thereof, or the adoption of other remedial measures to minimize, prevent, control or abate pollution (A.R.S. §36.1856(8).

The Arizona Water Commission has broad planning authority over the state's water resources and is responsible for formulating plans for the practical and economic development, management, conservation and use of the watersheds and waters of the state (A.R.S. §45.506). The Commission also administers the State Water Plan (A.R.S. §45.2504A) and prosecutes and defends Arizona's rights and claims to interstate streams (A.R.S. §45.502).

The State Land Department has planning authority over both water and land and has the responsibility for the general control and supervision of the waters of the state (A.R.S. §45.102A). The Department may make surveys and investigations of these resources and its authority extends to the regulation of ground water by its power to delineate critical ground water basins.

In 1973, the Legislature directed the State Land Department to recommend to it guidelines for a land use policy for the lower Colorado River area (Ch. 154, §3, 1973 Arizona Laws 1234).

1.2.1 Additional Agency Involvement

The State Land Department also has general administrative supervision and control of the appropriation and distribution of the waters of the state (A.R.S. §45.102). This Department may also conduct investigations of water resources of the state to determine their extent and potential for development (A.R.S. §45.103).

Finally, the State Water Engineer is charged with the supervision of the construction of dams and reservoirs (A.R.S. §45.103). The State Water Engineer must give written approval of the plans and specifications before the construction of a dam or reservoir may be commenced (A.R.S. §45.103) (see Figure 2).

1.3 SPECIAL LEGISLATION

The Geothermal Resources Act provides that the Oil and Gas Conservation Commission must supervise the drilling, operation, maintenance, and abandonment of geothermal resource wells in order to prevent damage to or contamination of any waters of the state (A.R.S. §27.652A).

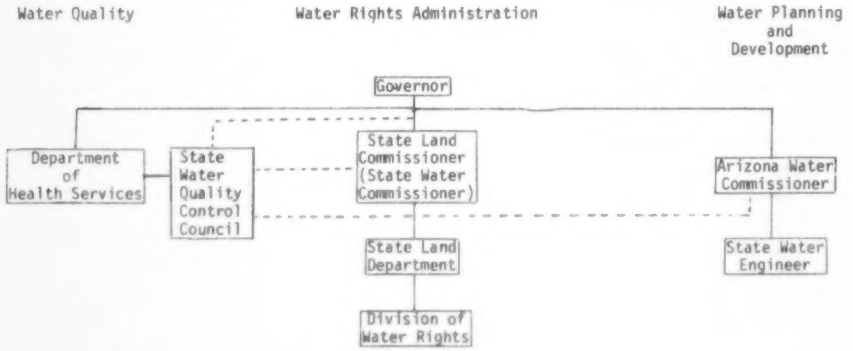
This act provides that the disposal of water or brines obtained from a geothermal well must not damage or contaminate the underlying ground water aquifer or pollute any stream, river, or body of surface water (A.R.S. §27-652C). Whenever the Commission finds that it is in the interest of preventing subsidence of the land surface, or maintaining the quality of surface and ground waters, it may require the reinjection of the geothermal effluent or the injection of other water supplies into the producing zones (A.R.S. §27-652D).

1.4 RELATED LEGISLATION

The Natural Resource Conservation Districts Act gives such a district the power to:

> Conduct surveys, investigations and research relating to the character of the soil, erosion prevention within a farm or ranch, methods of cultivation, farm and range practices, seeding, eradication of noxious growths and such other measures as will aid farm and range operations, disseminate information pertaining thereto, and carry on research programs with or without the cooperation of the state, the United States or agencies thereof (A.R.S. §45. 2054(1)).
>
> Cooperate and enter into agreements with a landowner, operator or any agency or subdivision of the state or federal government to carry on programs of soil erosion

Figure 2. Arizona Water Agencies and Their Functions


Water Quality
Water Rights Administration
Water Planning and Development
Governor
Department of Health Services
State Water Quality Control Council
State Land Commissioner (State Water Commissioner)
Arizona Water Commissioner
State Land Department
State Water Engineer
Division of Water Rights

prevention, methods of cultivation, cropping practices, land leveling and improvement on agricultural lands, and programs limited to methods of proper range use, reseeding and the eradication of noxious growth on grazing lands, all within the limits of an individual farm or ranch and subject to such conditions as the supervisors deem necessary (A.R.S. §45.2054(3)).

This act created the Division of Natural Resource Conservation as a division of the State Land Department (A.R.S. §45.2011). The Commissioner of the newly created division must consider:

1. The topography of the area.
2. The character of soils.
3. The distribution of erosion.
4. Prevailing land use practices.
5. The desirability and necessity of including within the boundaries of the district the particular lands under consideration and the benefits to be received by such inclusion.
6. The relation of the proposed area to existing watersheds and agricultural regions, and to other districts already organized or proposed for organization.
7. Such other physical, geographical and economic factors as are relevant.

in defining the boundaries of such a district (A.R.S. §45.2033).

1.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

Arizona's regulations dealing with water quality standards have set forth designated beneficial uses (Arizona Water Quality Standards, R9-21-204). These designated uses include an agricultural and industrial classification which is defined as "surface water which is suitable for general and industrial usage" (Arizona Water Quality Standards, R9-21-204E).

The Water Quality Control Council may make a determination that water quality standards do not apply when the entire flow in a watercourse that would otherwise be dry is effluent from agricultural irrigation return flow (Arizona Water Quality Standards, R9-21-210A). Furthermore, water quality standards do not apply to the collection, return, or drainage of agricultural irrigation return flows, excess or tailwaters to canals, laterals or other man-made irrigation water delivery facilities within an irrigation system, or chemical maintenance of irrigation facilities within an irrigation system where agriculture is the only designated primary beneficial use, or physical or mechanical maintenance of irrigation facilities within an irrigation system.

While Arizona has regulations dealing with sewerage systems and waste treatment works, it does not have regulations dealing with confined livestock feeding areas.

1.6 CASE LAW APPLICABLE TO AGRICULTURE

In Sullivan v. Jones (13 Ariz. 229, 108 P. 476, 1910), the Supreme Court of Arizona stated that an appropriator who is making no use of water below another appropriator's dam is not entitled to an injunction restraining the other from polluting the water by allowing his sheep to go into it.

In the landmark decision of Arizona Copper Co. v. Gillespie (12 Ariz. 190, 100 P. 465, 1907), the Supreme Court of Arizona held that in order to authorize a private person to maintain an action to abate a public nuisance, he must show a special injury which is different in kind and not merely in degree, from that suffered by the public generally. The Court went on to state that the owner of arid agricultural lands who has a right to use water for irrigation purposes has an interest in the water which is different from that of the general public. He is therefore entitled to maintain an action to restrain deposits of mineral debris in streams which are tributary to the river from which he withdraws his irrigation water, when that water is rendered unfit for use. Furthermore, a subsequent appropriator cannot deprive a prior appropriator to his rights of appropriation by diminishing the quantity or deteriorating the quality.

1.7 INFORMATION SOURCES

Schoenbaum, Thomas J. "Water Pollution in Interstate Streams, Efficacy of Federal and State Control," 12 Arizona Law Review, 1, 1972.

Schroeder, Milton R. "Regulation of Private Land Use," Arizona State Law Journal, 1974, p. 163.

Harshbarger, J. W., et al. Arizona Water. Geological Survey Water-Supply Paper 1648, U.S. Gov't. Printing Office, Wash., D.C.: 1966.

Mann, Dean E. The Politics of Water in Arizona. The University of Arizona Press, 1963.

Kelso, M. Maurice, et al. Water Supplies and Economic Growth in an Arid Environment: An Arizona Case Study. The University of Arizona Press, 1973.

DeCook, Kenneth James. Economic Feasibility of Selective Adjustments in Use of Salvageable Waters in the Tuscon Region, Arizona. A dissertation submitted to the faculty of the Committee on Hydrology and Water Resources, 1970.

Klock, John W. "Water Quality and Use," Water Resource Systems. Arizona State University, 1970.

APPENDIX A

2. CALIFORNIA

2.1 SUMMARY OF WATER QUALITY LAWS

2.1.1 Background

In 1928, the adoption of Article X, Section 2 of the California Constitution made all water rights subject to the limitation of reasonable beneficial use and no right extended to waste or the unreasonable use, unreasonable method of use, or unreasonable method of diversion.

Before the adoption of the Water Pollution Control Act in 1949 (commonly referred to as the Dickey Act), the State Department of Public Health was the agency in California given the responsibility for the correction and control of water pollution (Cal. Stat. ch. 60, § 1 at 611-15, 1939). This Department focused on discharges by industries, municipalities and quality problems which affected domestic water supply. The Department did not become involved in natural sources of water quality degradation or with agricultural pollution (Couzens, p. 7, 1969).

The Department issued permits through its Division of Environmental Sanitation and Bureau of Sanitary Engineering for all sewage and waste disposal devices in the state (Cal. Health and Safety Code, § 5412-62, Deering, 1945). It had the power to revoke these permits whenever a disposal process became a nuisance or a menace to public health.

Water pollution control during this period could also be found in the Fish and Game Code, which prohibited the deposit of any substance or material which would be deleterious to fish, plant, or bird life into any state waters (Cal. Fish and Game Code 481, Deering, 1944). Furthermore, the Department of Agriculture had the authority "to take direct action with respect to plant or animal disease carried in industrial wastes" ("California's Water Pollution Problem," p. 65, 1961; see also 3 Cal. Adm. Code § 771-75, 1012).

In 1949, the Assembly Interim Committee on Water Pollution adopted a proposal which would attack California's water pollution problems in a radically different manner (Couzens, p. 9, 1969). The Committee recommended that the problems of pollution constituting a menace to health be separated from those creating economic damage. The Committee also recommended a system of regional boards whose jurisdiction would correspond to the major watershed regions of the state and whose responsibility would be that of pollution control within its region. The Committee also decided that a state board would be necessary to coordinate the activities of the various state-wide agencies and the regional boards.

The 1949 Legislature followed these recommendations and enacted a radically different water pollution control law referred to as the Dickey Act. The Dickey Act initiated a state-wide attack on water pollution.[1] Principal control powers were vested in nine regional water quality control boards which covered the entire state. The Dickey Act also created the State Water Quality Control Board, which coordinated and supervised the regional boards (Cal. Water Code, § 13010-11). This Act repealed the State Health Department's permit system, but did not take away the Department's control over contamination (Cal. Stats. 1949, c. 1550, p. 2789).

In 1967, the California legislature formally recognized that the quality of water is directly related to its quantity (Couzens, p. 25, 1969). As a result, the State Water Rights Board was combined with the State Water Quality Control Board to form the State Water Resources Control Board (Cal. Stat. 1967, ch. 284, § 1 at 1441). To ease this transition, the legislature created the Water Quality Advisory Committee (C.W.C. § 13019, West. Supp. 1968; See § 13120 to 13124, Repealed by Stats. 1972, c. 813, p. 1458, § 1).

The Porter-Cologne Water Quality Control Act was enacted in 1969 which completely revised Division 7 of the Water Code, the former Dickey Act (Cal. Stat. 1969, c. 482). This law was the first complete revision of the state's water quality control laws in two decades and had been labeled as the "toughest water quality act in the nation" (Robie, p. 2, 1970). This law provided new procedures to enable the State Water Resources Control Board to carry out water quality objectives more effectively through its water rights function. This Act made important changes in the state-wide policy for water quality control and armed the regional water quality boards and the State Water Resources Control Board with a new arsenal of administrative powers (Robie, p. 4, 1970). While the Porter-Cologne Act retained the organizational concept of the Dickey Act, it made important changes in the definitions of pollution, nuisance, contamination and beneficial uses to be protected from quality degradation. One of the most far-reaching changes made by the Act was the elimination of the requirement in the Dickey Act that a board must prove that a pollution or nuisance was taking place (Robie, p. 13, 1970).

Under the Porter-Cologne Act, a board need only show that a waste discharge requirement has been violated, or that such violation was threatened. As a result, the water quality control provisions of California law are enforceable through the establishment of waste discharge requirements (See Couzens, p. 1, 41, 1969).

In response to the National Environmental Policy Act (42 U.S.C. § 4321-47, 1970), the California Legislature enacted the California Environmental Quality Act (Cal. Pub. Res. Code § 21000 et. seq., enacted, Cal. Stats. 1970, c. 1433, § 1, at 2780). The policies behind both the National Act and the California Act are similar in that they seek to provide every person with a habitable and comfortable environment in which to live and with opportunities to participate in the decision-making processes of the agencies responsible for preserving environmental integrity (Cal. Pub. Res. Code. § 21100).

In 1971, the legislature granted authority to the Attorney General to protect the natural resources of the state from pollution, impairment, or destruction (Cal. Gov't Code § 12600-12 West Supp. 1973). The term "natural resources" includes land, water, minerals and vegetables (Cal. Gov't Code § 12605). Thus, the Attorney General can file an independent action or intervene in an existing action in order to protect any aspect of the environment.

---

[1] Note the title of this Act was changed to the Water Quality Control Act in 1965. Ch. 1657, (1965) Cal. Stats. 3760, See Cal. Water Code, hereafter C.W.C., § 13000-13064. Dept. of Health retained jurisdiction over public health hazards.

In 1972, the Legislature made a finding and declared that:

> since the Federal Water Pollution Control Act (33 U.S.C. 1151, *et. seq.*), as amended, provides for a permit system to regulate the discharge of pollutants to the navigable waters of the United States and provides that permits may be issued by states which are authorized to implement the provisions of such act, it is in the interest of the people of the state, in order to avoid direct regulation by the federal government of persons already subject to regulation under state law pursuant to this division, to enact the provisions of this chapter in order to authorize the state to implement the provisions of this Water Pollution Control Act and acts amendatory thereof or supplementary thereto, and federal regulations and guidelines issued pursuant thereto (Added by Stats. 1972, c. 1256, p. 2485, § 1, urgency, eff. Dec. 12, 1972, C.W.C. § 13370).
>
> The Legislature further finds and declares that it is necessary for the state board to amend its administrative regulations in order to comply with the Federal Water Pollution Control Act and regulations and guidelines adopted thereunder (C.W.C. § 13371).

On May 15, 1973 the Environmental Protection Agency granted California the authority to issue waste discharge permits under the National Pollutant Discharge Elimination System (*Environment Reporter*, *Current Developments*, May, 1973, p. 131).

Judicial decisions related to water quality control in California are covered in section 2.6 infra; however, one recent case deserves mention at this point for its potential impact on irrigated agriculture. On November 7, 1975, the California Court of Appeals, 1st Appellate District, Division One, handed down their decision in *E.D.F. v. East Bay Municipal Utility District* (8 ERC 1535). The Court held the California constitution, which requires that water resources be put to their fullest beneficial use, and that waste or unreasonable use of water be prevented, applied the rule of reasonable use to all water rights in the state, public, environmental, and private, and not merely to competing claims to property rights in water. This case is also commonly referred to as the "Federal-facilities case," for its decision that federal law, not state law, applied when the Bureau of Reclamation receives a permit from the state for a water project and subsequently, contracts the use of the waters. The case is now on appeal; however, the public rights in how the water resources will be used and returned to waterways or aquifers has been significantly raised.

2.1.2 Policy

California's water quality policy is set forth in the Porter-Cologne Water Quality Control Act. Section 13000 of this Act states that:

> The Legislature finds and declares that the people of the state have a primary interest in the conservation, control, and utilization of the water resources of the state, and that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state.
>
> The Legislature further finds and declares that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.
>
> The Legislature further finds and declares that the health, safety and welfare of the people of the state requires that there be a state-wide program for the control of the quality of all the waters of the state; that the state must be prepared to exercise its full power and jurisdiction to protect the quality of waters in the state from degradation originating inside or outside the boundaries of the state; that the waters of the state are increasingly influenced by interbasin water development projects and other statewide considerations; that factors of precipitation, topography, population, recreation, agriculture, industry and economic development vary from region to region within the state; and that the statewide program for water quality control can be most effectively administered regionally, within a framework of statewide coordination and policy.

"Quality of the water" or "quality of the waters" is defined as the:

> chemical, physical, biological, bacteriological, radiological and other properties and characteristics of water which affect its use (C.W.C. § 13050 (g)).

The California Legislature has further expressed it to be the policy of the state to:

> . . . conserve, protect and enhance its environment . . . to prevent destruction, pollution, or irreparable impairment of the environment and the natural resources of this state.
>
> It is in the public interest to provide the people of the State of California through the Attorney General with adequate remedy to protect the natural resources of the State of California from pollution, impairment, or destruction. Conservation of natural resources and protection of the environment are pursuits often beyond the scope of inquiry, legislation, or enforcement by local government; several local public entities existing in the same ecological community have acted in differing and, sometimes, conflicting manners; uniform, coordinated, and thorough response to the questions of protection of environment and preservation of natural resources must be assured; and those matters are of state-wide concern (Cal. Govt. Code § 12600).

Pollution is defined in the Porter-Cologne Act as the:

> alteration of the quality of the waters of the state by waste to a degree which unreasonably affects: (1) such waters for beneficial uses, or (2) facilities which serve such beneficial uses . . . (C.W.C. § 13050).

California statute also states that it is the primary interest of the people of the state in the conservation of all available water resources to require the maximum reuse of waste water to satisfy the requirements of beneficial use (C.W.C. § 3461).

The Legislature has further declared it to be the policy of the state to:

> (a) Develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.
> (b) Take all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.
> (c) Prevent the elimination of fish and wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for the future generations representations of all plant and animal communities and examples of the major periods of California history.
> (d) Insure that the long-term protection of the environment shall be the guiding criterion in public decisions.
> (e) Create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations.
> (f) Require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality.
> (g) Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and to consider alternatives to proposed actions affecting the environment (Cal. Public Res. Code § 21001).

In relation to ground water it has been declared that:

> the State (has) a primary interest in the correction and prevention of irreparable damage to, or impaired use of, the ground water basins of this State caused by critical conditions of overdraft, depletion, sea water intrusion or degraded water quality (C.W.C. § 12922).

Furthermore, the Legislature has found and declared that:

> the greater portion of the water used in this State is stored, regulated, distributed and furnished by its ground water basins, and that such basins are subject to critical water quality causing great detriment to peace, health, safety, and welfare of the people of the State (C.W.C. § 12922.1).

California's Water Reclamation Law (C.W.C. § 13500 et. seq.) Article 2 states:

> It is hereby declared that the people of the state have a primary interest in the development of facilities to reclaim water containing waste to supplement existing surface and underground water supplies and to assist in meeting the future water requirements of the state (C.W.C. § 13510).
>
> The Legislature finds and declares that a substantial portion of the future water requirements of this state may be economically met by beneficial use of reclaimed water.
>
> The Legislature further finds and declares that the utilization of reclaimed water by local communities for domestic, agricultural, industrial, recreational, and fish and wildlife purposes will contribute to the peace, health, safety, and welfare of the people of the state. Use of reclaimed water constitutes the development of "new basic water supplies" as that term is used in Chapter 5 (commencing with Section 12880) of Part 6 of Division 6 (C.W.C. § 13511).

California's Water Reclamation Law further states that:

> it is the intention of the Legislature that the state undertake all possible steps to encourage development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the state (C.W.C. § 13512).

The State Water Resources Control Board is responsible for formulating California's policy for water quality control (C.W.C. § 13140), which must be periodically reviewed (C.W.C. § 13143). To insure compliance with state policy, all regional water quality control plans must be approved by the State Board (C.W.C. § 13245).

State policy for water quality control shall consist of all or any of the following:

> (a) Water quality principles and guidelines for long-range resource planning, including ground water and surface water management programs and control and use of reclaimed water.
> (b) Water quality objectives at key locations for planning and operation of water resource development projects and for water quality control activities.
> (c) Water quality control plans adopted by the state board for interstate or coastal waters or other waters of interregional or statewide interest.
> (d) Other principles and guidelines deemed essential by the State Board for Water Quality Control (C.W.C. § 13142).

The State Board cannot adopt a state policy for water quality control unless a public hearing is held (C.W.C. § 13147). Sixty days in advance of the hearing the State Board must notify the appropriate regional board and give notice of the hearing by publication.

2.1.3 Classification

The nine Regional Water Quality Boards are required by State Constitution and State statute to protect the beneficial uses of all waters (Cal. Const., art. XIV § 3; C.W.C. § 13005, West. Supp. 1967, Repealed by Stats. 1969, c. 482, p. 105, § 17. See C.W.C. § 13050).

Beneficial uses of the waters of the state that may be protected against quality degradation include, but are not limited to:

> domestic, municipal, agricultural and industrial supply; power generation, recreation; esthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves (C.W.C. § 13050 (f)).

Each Regional Board must adopt water quality plans for all areas within its region (C.W.C. § 13240). These plans must contain a designation for the waters within a speicified area of the beneficial uses to be protected (C.W.C. § 13050). However, there is no *statewide* system of classification. The Regional Boards are permitted to establish standards suitable to the needs of each region (C.W.C. § 13000-03, West Supp. 1967, § 13003 was repealed by Stats. 1969, c. 482, p. 1051 §17. See now C.W.C. § 13001).

California has a classification system for waste discharges to land which is divided into three groups. Group one wastes include among others, water from agricultural origin such as chemicals from pesticides or fertilizers and discarded containers of chemicals unless adequately cleansed (23 C.A.C. § 2520, See *Environment Reporter, State Water Laws*, vol. 1, § 721:0535).

Group two wastes under the agricultural origin include:

> (1) Plant residues from the production of crops including, but not limited to, stalks, vines, green drops, culls, stubble, hulls, lint, seed, roots, stumps, prunings, and trimmings.
> (2) Manure.
> (3) Dead animals or portions thereof.
> (4) Adequately cleansed pesticide containers (*Ibid*.).

Group three wastes consist of nonwater soluble, nondecomposable inert solids and are unrelated to agriculture (*Ibid*.).

2.1.4 Standards

The Porter-Cologne Act directs each Regional Board to formulate and adopt water quality control plans for all areas within its region (C.W.C. § 13240). These plans consist of "A" designation or establishment for the waters within a specified area of (1) beneficial uses to be protected, (2) *water quality objectives*, and (3) a program of implementation needed for achieving water quality objectives (C.W.C. § 13050; Emphasis added).

Water quality objectives are defined as:

> *the limits or levels of water quality constituents* or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specified area (C.W.C. § 13050 (h). Emphasis added).

Water quality objectives must be those which, in the Board's judgment, will ensure the reasonable protection of beneficial uses and the prevention of nuisance (C.W.C. § 13241).

Nuisance is defined by the Porter-Cologne Act as anything which:

> (1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property, and (2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal, and (3) occurs during or as a result of the treatment or disposal of wastes (C.W.C. § 13050 (m)).

The Regional Boards must establish these water quality objectives and in doing so they must consider:

> (a) Past, present and probable future beneficial uses of water.
> (b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.
> (c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.
> (d) Economic considerations (C.W.C. § 13241).

The State Board may also adopt water quality plans for waters for which water quality standards are required by the Federal Water Pollution Control Act. These plans supersede any regional water quality control plans for the same waters.

Waste discharge requirements must be adopted to meet the following:

> (a) Not later than July 1, 1977, effluent limitations for point sources, other than publicly owned treatment works, which (1) shall require the application of the best practicable control technology currently available as defined under the Federal Water Pollution Control Act, as amended, or (2) in the case of a discharge into publicly owned treatment works as defined in subdivision (b), shall require compliance with any applicable pretreatment or toxicity requirements.
> (b) For publicly owned treatment works in existence on July 1, 1977, or approved pursuant to the Federal Water Pollution Control Act, as amended, prior to June 30, 1974, for which construction shall be completed within four years of approval, effluent limitations based upon secondary treatment, as defined under the Federal Water Pollution Control Act.
> (c) Not later than July 1, 1977, any more stringent limitation, including those necessary to meet water quality standards, treatment standards, or schedules of compliance under this division or as required under the Federal Water Pollution Control Act, as amended.
> (d) Not later than July, 1983, effluent limitations for categories and classes of point sources, other than publicly owned treatment works, which (1) shall require application of the best available technology economically achievable for such category or class, which will result in reasonable further progress toward the goal of eliminating the discharge of all

pollutants as determined under the Federal Water Pollution Control Act, as amended, or (2) in the case of the introduction of a pollutant into a publicly owned treatment works which meets the requirements referred to in subdivision (c), shall require compliance with any applicable pretreatment or toxicity requirements.

(e) Not later than July 1, 1983, compliance by all publicly owned treatment works, with requirements promulgated under the Federal Water Pollution Control Act, as amended.

(f) Any more stringent effluent standards or limitations necessary to implement water quality control plans, or for the protection of beneficial uses or to prevent nuisances.

(g) National standards of performance promulgated by the administrator.

(i) Ocean discharge criteria promulgated by the administrator (C.W.C. § 13379).

2.1.5 Permit System

The Regional Boards must issue waste discharge "permits" (requirements) as authorized by the Federal Water Pollution Control Act (C.W.C. § 13377, See 33 U.S.C. 1151 et. seq.).[2] These "permits" must insure compliance with any applicable effluent limitation, water quality related effluent limitations, national standards of performance, and toxic and pretreatment effluent standards (C.W.C. § 13377).

Any person who discharges or proposes to discharge waste into any region must file a report of that discharge to the appropriate Regional Board if that discharge could affect the quality of the water (C.W.C. § 13260). The report must be accompanied by a filing fee not to exceed $1000 (C.W.C. § 13260 (d)) and be filed no less than 180 days in advance of the date on which it is desired to commence the discharge or in sufficient time prior to commencement of the discharge to insure compliance with Section 306 of P.L. 92-500 and any other applicable water quality standards, or effluent standard (23 C.A.C. §2235.1, Environment Reporter, State Water Laws, vol. 1, § 721:0520 to :0526).

This report requirement is satisfied if the discharger files:

1. A complete Refuse Act application.
2. A complete NPDES application form which is appropriate for the type, category, or size of discharge (23 C.A.C. § 2235.1 (c)).

A new report will be required 120 days prior to any of the following:

(1) Addition of a major industrial waste discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste.

(2) Significant change in disposal method (e.g., change from a land disposal to a direct discharge to water, or change in the method of treatment which would significantly alter the characteristics of the waste).

(3) Significant change in the disposal area (e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area potentially causing different water quality or nuisance problems).

(4) Increase in flow beyond that specified in the waste discharge requirements.

(5) Other circumstances which result in a material change in character, amount or location of waste discharge (23 C.A.C. § 2235.1 (d)).

The Regional Board reviews the report of waste discharge to determine if waste discharge requirements should be issued or the discharge prohibited (Calif. Regs. § 2235.4). If the waste discharge requirements are issued, the Regional Board executive officer must formulate tentative waste discharge requirements including:

(A) Proposed effluent limitations

(B) Proposed time schedule for compliance including any necessary interim dates.

(C) Proposed special conditions.

(D) Proposed conitoring program (23 C.A.C. § 2235.4 (a) 3).

Any discharge which exceeds 500,000 gallons on any day of the year requires the discharger to prepare a fact sheet concerning the discharge (Calif. Regs. § 2235.4 (c)). This fact sheet must contain:

(A) A sketch or detailed description of the location of the discharge.

(B) The rate and frequency of the proposed discharge.

(C) For thermal discharges, the average summer and winter temperature in degrees Fahrenheit.

(D) The average daily discharge in pounds per day of pollutants which are subject to limitations.

(E) A statement of the intent to issue waste discharge requirements.

(F) A list of beneficial uses of the receiving waters.

(G) Summary of the applicable water quality standards and proposed effluent limitation.

(H) A notice of the time period for comment, the person to whom comments should be addressed, and the date of public hearing (23 C.A.C. § 2235.4 (c)).

All waste discharge requirements must:

> comply with effluent limits adopted under Sections 301, 302, 306 and 307 of the Federal Water Pollution Control Act and whenever necessary to meet water quality standards or prohibitions or comply with water quality control plans established under Division 7 of the California Water Code, any other federal law or regulation, any plan approved pursuant to Section 208(b) of the Federal Water Pollution Control Act. Prior to promulgation by the administrator of applicable effluent standards and limitations pursuant to Sections 301, 302, 306 and 307, waste discharge requirements shall contain effluent limits and other conditions necessary to carry out the provisions of the Federal Water Pollution Control Act (23 C.A.C. § 2235.5).

Waste discharge requirements are adopted for a fixed term not to exceed five years (Calif. Regs. § 2235.7). Waste discharge requirements for discharges to surface waters also serve as NPDES permits (Rights - Quality, 1975, p. 5).

---

[2] Terminology in California uses "requirements" instead of "permits."

Waste discharge "permits" may be terminated or modified for cause which includes the following:

(a) Violation of any condition contained in the requirements.
(b) Obtaining the requirements by misrepresentation, or failure to disclose fully all relevant facts.
(c) A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

These procedures for discharge requirements can be applied with relative ease to discharges emanating from a single point; however, when the discharge results from seepage, as is the case generally with agricultural operations, it is difficult to determine the amount of the discharge. Recognizing this, the Report of the Assembly Committee on Water on the Porter-Cologne Act stated that:

> Although farmers as well as other persons theoretically required by Sections 13054 and 13054.1 of the present Water Code to file reports of waste discharges with the regional boards, it has not been the general practice of the regional boards to request such reports or to issue waste discharge requirements covering agricultural operations and other land use, except in cases such as feeder lots or dairies, involving substantial discharges of waste (The Porter-Cologne Act) . . . adds Section 13269, which will expressly authorize regional boards to waive the filing of reports or the prescription of waste discharge requirements where such waiver is not against the public interest (Robie, 1970, p. 18).

Once discharge requirements are established, the discharger is notified in writing of the requirements to be met (C.W.C. § 13263 (f)). The discharger then has the burden of complying with the requirements in any lawful manner.

To dispel any notion that a discharge requirement is in the nature of a permit to discharge, the Porter-Cologne Act specifically provides that discharges do not receive the status of vested rights, but are in the nature of a privilege (C.W.C. § 13267 (c). See Appendix B for NPDES permits from the Central Valley Region).

California applies a unique approach to handling the irrigation return flow problem. First of all in California, irrigation return flow is not treated as a point or non-point source. It is simply looked at as a water quality degradation problem. The state is divided into various regions (see figure 2). Each region has the authority to control the water quantity and water quality within its region.

California does apply a permit-type program, primarily to satisfy the federal requirements and secondly, there has not been a significant amount of resistance to the California "permit" system since it is only for monitoring and not for enforcement. The permit system was initiated due to the conclusion by the Water Conservation Conference convened by the Department of Water Resources, in which the conference panel decided that California law empowered the Districts in California to carry out many functions, one of which is water quality control. As a consequence of the panel activity, an Agricultural Water Advisory Committee was formed in 1974 consisting of the water users and government representatives. This Agricultural Water Quality Advisory Committee suggested that the water purveyor cosign with the districts on a permit issued by the regional authority.

This is the general nature of the permit in California. It is a permit in which all entities and individuals in a geographical area cosign on the permit. Under this practice, the burden is not placed on the individual discharger. The California program is a voluntary program and the monitoring costs are paid from an assessment collected by the various entities.

The intent of the permit is first to establish a data base with three parameters: flow, E.C., and suspended solids for supply and discharges of water.

Permits are different in different areas of the state. They are, that is, site-specific and range from the simple to the complex, with the Delta permits being the most complex (See Appendix A). There are three phases to implementing the cosigner permit system: (1) the regional personnel will sit with a committee made up of representatives from the various entities to identify what the cropping patterns are, where the water discharge and diversion facilities are, what the irrigation practices are, and identify those places where monitoring practices have taken place; (2) monitoring sites are selected by the Department of Water Resources and the regional office; and (3) monitoring begins.

2.1.6 Sanctions and Enforcement Measures

The Porter-Cologne Act declares that no provision of the Act or ruling of the State Board is a limitation:

(a) On the power of a city or county or city and county to adopt and enforce additional regulations, not in conflict therewith, imposing further conditions, restrictions, or limitations with respect to the disposal of waste or any other activity which might degrade the quality of the waters of the state.
(b) On the power of any city or county or city and county to declare, prohibit, and abate nuisances.
(c) On the power of the Attorney General, at the request of a regional board, the State Board, or upon his own motion, to bring an action in the name of the people of the State of California to enjoin any pollution or nuisance.
(d) On the power of a state agency in the enforcement or administration of any provision of law which it is specifically permitted or required to enforce or administer.
(e) On the right of any person to maintain at any time any appropriate action for relief against any private nuisance as defined in the Civil Code or for relief against any contamination or pollution (C.W.C. § 13002).

If a Regional Board finds that a waste discharge violates any requirements, the Board may require the discharger to submit for approval a detailed time schedule of specific actions to be taken in order to correct or prevent the violation (C.W.C. § 13300).

Violation of requirements or discharge prohibitions allows the Regional Board to issue a cease and desist order which directs compliance forthwith, compliance in accordance with a time schedule set by the Board, or in the event of a threatened violation, to take appropriate remedial or preventive action (C.W.C. § 13301).

California regulations state that:

> (A) A cease and desist order should be issued whenever significant violations of waste discharge requirements or prohibitions are threatened or such violations are occurring or have occurred and there is a likelihood that the violation will continue in the future (Cal. Regs. § 2240, See Environment Reporter, State Water Laws, vol. I, § 721:0526).

Cease and desist orders may be issued directly by a Regional Board, after notice and hearing (C.W.C. § 13301). These hearings may be conducted by hearing panels which have been designated by the Regional Board (C.W.C. § 13302). Due notice of the hearing must be given to all persons who would be affected (C.W.C. § 13302 (b)). Upon completion of the hearing, the panel reports its decision and order to the Regional Board who will then adopt, with or without revision, the proposed decision and order (C.W.C. § 13302 (b)). The cease and desist order becomes effective and final when it is issued (C.W.C. § 13303). Copies of the order are served by personal services or by registered mail (C.W.C. § 13303).

The Porter-Cologne Act also provides that:

> (a) Any person who discharges waste into the waters of this state in violation of any waste discharge requirement or other order issued by a regional board or the state board, or who intentionally or negligently causes or permits any waste to be discharged and deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board clean up such waste or abate the effects thereof or, in the case of threatened pollution or nuisance, take other necessary remedial action. Upon failure of any person to comply with such cleanup or abatement order, the Attorney General, at the request of the Board, shall petition the superior court for that county for the issuance of an injunction requiring such person to comply therewith. In any suit, the court shall have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent as the facts may warrant (C.W.C. §§13304 (a), 13262, & 13264 (b)).

This statute allows the Regional Board to expend available moneys to perform any cleanup, abatement, or remedial work in the default of or in addition to the remedial work by the waste discharger (C.W.C. § 13304 (b)). If the Board orders the waste to be cleaned up, the person who discharged the waste is liable to the extent of the reasonable costs actually incurred in cleaning up such waste (C.W.C. § 13304(c)).

Within thirty days of any action or failure to act by a Regional Board, an aggrieved person may petition the State Board to review such action (C.W.C. § 13320). If the State Board finds that the Regional Board acted improperly it may:

> (1) direct that the appropriate action be taken by the regional board, (2) refer the matter to any other state agency having jurisdiction, (3) take the appropriate action itself, or (4) any combination of the foregoing (C.W.C. § 13320 (c)).

With thirty days after service of a copy of a decision of the State Board, an aggrieved party may file a petition for a writ of mandate with the superior court.

If a person fails to comply with a cease and desist order, the Attorney General, upon request of the appropriate Board, will file a petition in superior court for the issuance of a preliminary or permanent injunction (C.W.C. § 13331 (a)).

If a discharge will cause a condition of pollution or nuisance, constituting an emergency requiring immediate action to protect the public health, welfare or safety, the Attorney General may petition the superior court to enjoin the discharge, upon request of the Board (C.W.C. § 13340).

Civil monetary remedies are set forth in § 13350 of the California Water Code. This statute provides that any person who intentionally or negligently violates any cease and desist order, or who violates any waste discharge requirement, may be liable civilly in a sum not to exceed $6,000 for each day of the violation (C.W.C. § 13350). The Attorney General must petition the superior court to impose, assess and recover such sums (C.W.C. § 13350 (b)).

Further, in any civil action in which a temporary restraining order, preliminary injunction, or permanent injunction is sought, it is not necessary to allege or prove that irreparable damage would occur (C.W.C. § 13361 (c)).

The Attorney General, upon request of the State or Regional Board, must petition the appropriate court for the issuance of a preliminary or permanent injunction upon a violation of the terms of any cease and desist order, prohibition, waste discharge requirement, effluent limitation, national standard of performance, pretreatment or toxicity standards (C.W.C. § 13386 (b)). Any person, who willfully or negligently violates any of the above is subject to a fine of not more than $25,000 or less than $2,500 for each day the violation occurs, or by imprisonment for not more than one year in the county jail, or both (C.W.C. § 13387). After a first conviction, the punishment is not more than $50,000 for each day of the violation or by imprisonment for not more than two years in the county jail or both (C.W.C. § 13387).

In absence of the willfulness or negligence element, the violator is subject to a civil penalty not to exceed $10,000 for each day the violation occurs (C.W.C. § 13385).

It is a misdemeanor to use any chemical or other substance in violation of any State Board regulation, for failure to furnish a report under Section 13260 when requested by a Regional Board for discharging waste in violation of Section 13264 after the violation had been called to the attention of the executive director in writing by the Regional Board, and for failing or refusing to furnish technical or monitoring program reports as required by Section 13267 (b), or by falsifying any information therein (C.W.C. §§13169, 13261, 13265, 13268).

Any Regional Board, in establishing or reviewing any water quality control plan or waste discharge requirement, may investigate the quality of any waters

(C.W.C. § 13267 (a)). In such an investigation, the Regional Board may require the discharger to furnish, under penalty of perjury, such technical or monitoring program reports as the Board may specify (C.W.C. § 13267 (b)).

Under California's Water Reclamation Law, it is a misdemeanor for failure to furnish a report under § 13522.5 when a Regional Board has so requested, for any person reclaiming water or using reclaimed water in violation of Section 13524, and for using reclaimed water for any purpose for which reclamation criteria have been established prior to their establishment (C.W.C. §§13522.6, 13525.5, 13526).

2.2 ADMINISTRATION OF THE LAWS

Water quality control in California is largely the responsibility of the State Water Resources Control Board, the nine Regional Water Quality Control Boards, and the State Department of Public Health.

2.2.1 State Water Resources Control Board

The State Water Resources Control Board was created in 1967 and succeeded to the functions of the former State Water Rights Board and the State Water Quality Control Board, which were abolished (Stats. 1967, Chap. 284).

The State Water Resources Control Board shall have at least two statutory divisions: the Water Rights Division and the Water Quality Division, each with a division chief (*Environment Reporter*, *State Water Laws*, vol. 1,§ 721:0091).

The members of the State Water Rights Board continued as members of the State Board (C.W.C. § 177). Thereafter, all members are appointed by the Governor for four year terms (*Ibid*). The Board consists of five members, one of whom must be an attorney, one a registered civil engineer, one a registered professional engineer, who is experienced in sanitary engineering and one who is qualified in the field of water quality and one member who is not required to have any specialized experience (C.W.C. § 175). The formation of the State Board resulted in the coordination of water quality functions and water rights. Water quality and pollution is taken into account along with the availability of unappropriated water whenever applications for appropriation of water are considered.

In 1967, the Legislature formally recognized that the quality of water is directly related to its quantity, e.g., that the degree of pollution in any given area is dependent upon the amount of diluting water available (Couzens, 1969, p. 25). In acting upon applications to appropriate water, the State Board must consider water quality objectives and subject appropriations to such conditions in carrying out these objectives (C.W.C. §§ 12435 & 1258). Specifically, this statute states that:

> The quantity of water diverted under this permit and under any license issued pursuant thereto is subject to modification by the State Water Resources Control Board if, after notice to the permittee and an opportunity for hearing, the board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the board finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges (23 C.A.C. § 1761(b)).

The new water quality control act has made additional changes relative to the appropriation of water. These changes clarify actions which the State Board must take to implement water quality objectives through its water rights function. The act authorizes the Board to do the following:

> (1) In determining the amount of water available for appropriation, to take into account, whenever in the public interest, the amounts of water needed to remain in the source for protection in a relevant water quality control plan (C.W.C. § 1243.5); (2) In action upon applications to appropriate water, to consider the relative benefits to be derived from uses specified to be protected in any relevant water quality control plan (C.W.C. § 1257); (3) Whenever it is in the public interest, to approve appropriation by storage of water to be released for the purpose of protecting or enhancing the quality of other waters which are put to beneficial uses (C.W.C. § 1242.5); and (4) To commence a ground water adjudication when requested (C.W.C. § 2100-2103).

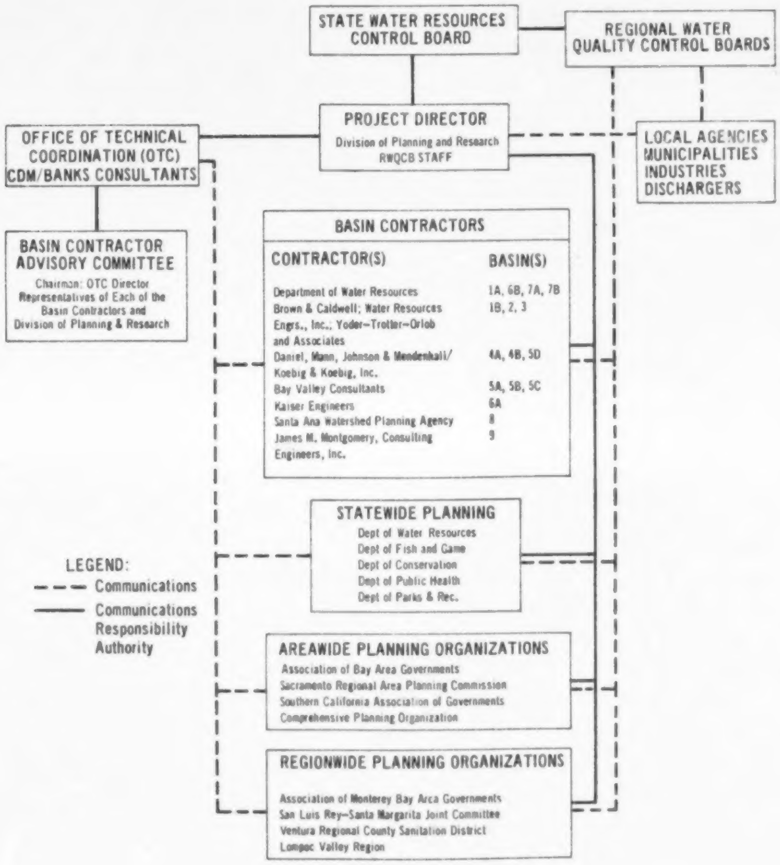
In addition to the Act, the Board has continuing authority in every water permit it issues or added to any permit as a condition for granting an extension to impose specific requirements to minimize waste of water, unreasonable use, unreasonable method of use and unreasonable diversion (23 C.A.C. Subch. 2, §17.2 §761). The Board can require among others, restrictions on diversions to eliminate tailwater runoff or reduce return flow from irrigated agriculture.

As stated earlier, the Porter-Cologne Act provides that a statewide water quality program can be most effectively administered regionally within a framework of statewide coordination and policy (C.W.C. 13000). Therefore, the Act gave the State Board numerous powers and duties concerning water quality control which " . . . increased . . . leadership and direction to the state's programs and much greater . . . influence over the actions and activities of the nine Regional Boards" (Robie, 1970, p. 24).

The Act directs the State Board to adopt state policy for water quality control (C.W.C. § 13140). The State Board must also guide the Regional Boards in their operations by adopting general procedures for the formulation, adoption and implementation by Regional Boards of water quality control plans (C.W.C. § 13164). See Figure 1.

Waste discharge requirements and actions taken by Regional Boards to insure enforcement is subject to review by the State Board at any time either on its own motion, or when petitioned by an aggrieved party (C.W.C. § 13320). The State Board is also responsible for the allocation of funds to the Regional Boards (C.W.C. § 13168). The State Board is also designated as the state water pollution control agency for all purposes stated in the Federal Water Pollution Control Act (C.W.C. § 13160). Further, the State Board must determine the state's

Figure 1. Project Management Comprehensive Water Quality Control Plans


STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS
PROJECT DIRECTOR
Division of Planning and Research
RWQCB STAFF
OFFICE OF TECHNICAL COORDINATION (OTC) CDM/BANKS CONSULTANTS
LOCAL AGENCIES
MUNICIPALITIES
INDUSTRIES
DISCHARGERS
BASIN CONTRACTOR ADVISORY COMMITTEE
Chairman: OTC Director
Representatives of Each of the Basin Contractors and Division of Planning & Research
BASIN CONTRACTORS
CONTRACTOR(S)
BASIN(S)
Department of Water Resources
1A, 6B, 7A, 7B
Brown & Caldwell; Water Resources Engrs., Inc.; Yoder-Trotter-Orlob and Associates
1B, 2, 3
Daniel, Mann, Johnson & Mendenhall/ Koebig & Koebig, Inc.
4A, 4B, 5D
Bay Valley Consultants
5A, 5B, 5C
Kaiser Engineers
6A
Santa Ana Watershed Planning Agency
8
James M. Montgomery, Consulting Engineers, Inc.
9
STATEWIDE PLANNING
Dept of Water Resources
Dept of Fish and Game
Dept of Conservation
Dept of Public Health
Dept of Parks & Rec.
LEGEND:
Communications
Communications Responsibility Authority
AREAWIDE PLANNING ORGANIZATIONS
Association of Bay Area Governments
Sacramento Regional Area Planning Commission
Southern California Association of Governments
Comprehensive Planning Organization
REGIONWIDE PLANNING ORGANIZATIONS
Association of Monterey Bay Arca Governments
San Luis Rey-Santa Margarita Joint Committee
Ventura Regional County Sanitation District
Lompoc Valley Region

needs for water quality research, and to recommend what research projects should be conducted (C.W.C. § 13161); and any program of statewide research in the technical phases of water quality control is administered by the State Board (C.W.C. § 13162).

The State Board may also require any state or local agency to investigate and report on any technical factors concerning water quality control (C.W.C. § 13165), and may approve appropriation by storage of waters to be released in order to protect the quality of other waters which are put to beneficial uses (C.W.C. § 31242.5).

2.2.2 Regional Boards

The Porter-Cologne Act directs the nine Regional Boards to formulate and adopt water quality control plans for all areas within its region (C.W.C. § 13240). A water quality plan does not become effective unless it is approved by the State Board (C.W.C. § 13245). If the State Board disapproves of the plan, it must be returned to the Regional Boards. All regional plans must be consistent with state policy for water quality control and legislative policy (C.W.C. § 13240). Water quality Plans are implemented when Regional Boards adopt waste discharge requirements for individual dischargers (C.W.C. § 13263 (a)). See Figures 2 and 3.

If a regional plan is not in effect for the waters under consideration, the Regional Board will establish water quality objectives reasonably required to protect beneficial uses. Upon violation of requirements by a discharger, the Regional Board has the power to issue a cease and desist order (C.W.C. § 13301). The Board need not prove that a pollution or nuisance is taking place, but need only show that a waste discharge requirement has been violated, or that such violation is threatened.

Figure 2. California Regional Water Quality Control Boards

NORTH COAST REGION
1000 Coddington Center
Santa Rosa, California 95401

SAN FRANCISCO BAY REGION
1111 Jackson Street, Room 6040
Oakland, California 94612

CENTRAL COAST REGION
1122-A Laurel Lane
San Luis Obispo, California 93401

LOS ANGELES REGION
Room 4027, 107 South Broadway
Los Angeles, California 90012

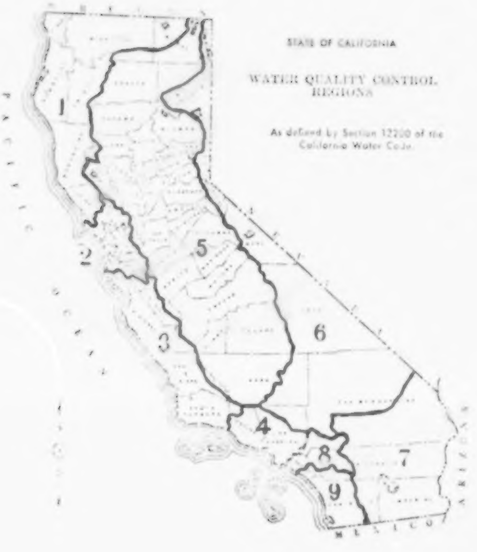
CENTRAL VALLEY REGION
3201 S Street
Sacramento, California 95816

LAHONTAN REGION
P.O. Box 14367
S. Lake Tahoe, California 95702

COLORADO RIVER BASIN REGION
51-75 Highway 111
Indio, California 92202

SANTA ANA REGION
6833 Indiana Avenue, Suite
Riverside, California 92506

SAN DIEGO REGION
6154 Mission Gorge Road, Suite 205
San Diego, California 92101


STATE OF CALIFORNIA
WATER QUALITY CONTROL REGIONS
As defined by Section 13200 of the California Water Code.
PACIFIC OCEAN
NEVADA
ARIZONA
MEXICO
1
2
3
4
5
6
7
8
9

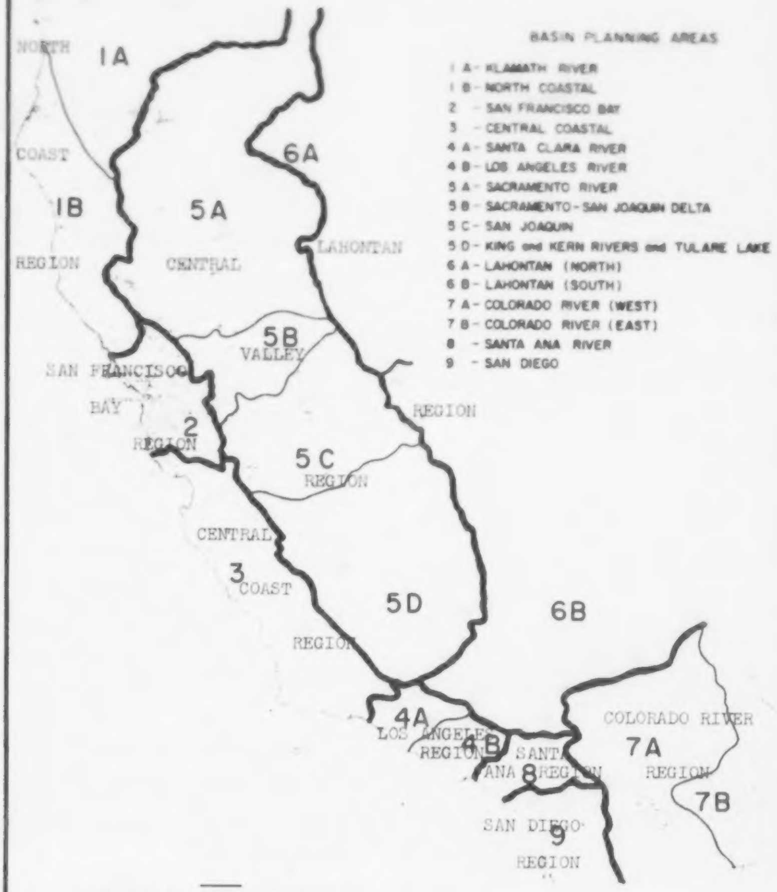
Regional Boards may specify certain conditions or areas where the discharge of waste, or certain types of waste, will not be permitted in any water quality control plan, or in waste discharge requirements (C.W.C. § 13243).

In addition to adopting water quality control plans and waste discharge requirements, each Regional Board can engage in planning and coordinating other state and local agencies to control water quality. Specifically, each Regional Board is commanded to obtain coordinated action in water quality control, encourage and assist in self-policing waste disposal programs, require investigations and reports from other state agencies, request enforcement of water quality control laws, recommend to the State Board projects for financial assistance, encourage regional planning, and report cases of contamination (C.W.C. § 13225).

2.2.3 State Department of Public Health

The California water quality control system is divided into two broad jurisdictions, pollution and nuisance on the one side, and contamination on the other. The Department of Public Health is responsible for all public health hazards. This division of authority is delineated in the definitions of contamination, pollution, and nuisance (C.W.C. § 13050 (k), (l) and (m)). Thus, a condition of contamination

Figure 3. Basin Location Map



INTERIM WATER QUALITY
CONTROL PLAN CALIFORNIA REGIONAL
WATER QUALITY CONTROL BOARD
1971

and pollution could exist simultaneously, giving both agencies jurisdiction.

Contamination is defined in the Porter-Cologne Act as:

> an impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" shall include any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected (C.W.C. § 13050 (k)).

If the Department finds a condition of pollution or nuisance, it must refer the problem to the appropriate Regional Board (C.H.S.C. § 5411). Further, duties of the Department concerning contamination have no implications for this study.

2.2.4 State Department of Fish and Game

The Department of Fish and Game is responsible for the protection, maintenance, enhancement and management of the fish and wildlife resources of the State. The Department is concerned with pollutants affecting fish and wildlife, the disposal of garbage and rubbish in or adjacent to the state waters, and the protection of fish spawning areas (C.F.G.C. § 5653, 5650, 5652, 1505). The Department makes statewide studies to determine the general sources and effects of various pollutants and give this information to the water quality control boards and other government agencies involved in the allocation and protection of water. The Department also contracts to perform water quality services for other state agencies, which are generally studies of the special ecological characteristics of specific water bodies (Couzens, 1969, p. 31). To avoid duplication of pollution control activities, the Department coordinates its activities with the Regional Boards, which is accomplished through mutual assistance in solving particular problems (Couzens, 1969, p. 33). The Department also works closely with the Boards to establish regional water quality policies by reporting on the extent of aquatic and wildlife resources of the area, the use of the resources by the public, and the water quality necessary to maintain these resources (Couzens, 1969, p. 33). Further, the Department coordinates its activities with the Department of Water Resources, the Department of Forestry, the Department of Agriculture, the Department of Public Health, and the Division of Highways (Couzens, 1969, p. 33).

2.2.5 State Department of Water Resources

The Department of Water Resources must submit to the State Board recommendations for the protection of the quality of ground water (C.W.C. §§ 12617.1, 12923.1, 2100). Further, the Department conducts surveys and investigations relating to the reclamation of water from wastes for beneficial purposes, including a determination of the quantities of such water presently wasted, and possibilities of use of such water for recharge of underground storage, or for agricultural or industrial uses (C.W.C. § 230). The Department also investigates conditions of damage to the quality of underground waters caused by improperly constructed, abandoned or defective wells through the interconnection of strata, or the introduction of surface waters into underground waters (C.W.C. § 231). It must then report to the appropriate Regional Board its recommendations for minimum standards of well construction and report to the Legislature its recommendations for the proper sealing of abandoned wells (C.W.C. § 231).

The Department must also conduct studies and investigations on the availability and quality of waste water, and the uses of reclaimed waste water, for beneficial purposes including ground water recharge, municipal and industrial use, irrigation use, and cooling for thermal electric power plants (C.W.C. § 462). The Department and the State Board must take all appropriate proceedings before executive, legislative, or judicial agencies to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water in this state (C.W.C. § 275).

2.2.6 Environmental Quality Study Council

The Environmental Quality Study Council must:

> (a) Make a thorough study of relevant policies, practices, and programs in the state that relate significantly to environmental quality, including noise emission control.
> (b) Identify major environmental quality problems, giving consideration to all of the possible interrelationships between the degradation or improvement of air, land, and water resources.
> (c) Develop long-range goals and make recommendations, after holding public hearings, as to policies, criteria, and programs as guides in the protection, management, and improvement of California's environmental quality.
> (d) Identify problems in existing environmental quality control efforts in the state, including unmet or inadequately met needs, undesirable overlaps or conflicts in jurisdiction, between or among federal, state, regional, and local agencies, and any efforts that may be unnecessary or undesirable.
> (e) Recommend, after holding public hearings, such legislative and administrative actions as may be necessary to establish goals, policies, and criteria and to implement programs that will effectively protect, manage, and improve environmental quality on a long-range basis.
> (f) Review and make recommendations, after holding public hearings, on proper state, regional, or local governmental mechanisms, which would formulate broad policies, objectives and criteria for the coordinated protection, management, and improvement of California's natural environment (Stats. 1968, c. 1395, p. 2753, § 1. Amended by Stats. 1969, c. 1042, p. 2027, § 2).

2.2.7 Agricultural Water Quality Advisory Committee

Due to the concern of California's agricultural industry over the effect of strong pollution controls, the Agricultural Water Quality Advisory Committee was formed in 1971. This Committee was established to provide advice and guidance to the State and Regional Boards on agricultural water quality and related problems (Report on Agricultural Activities, No. 2, 1976) and represented both private and public interests. It was this Committee which provided valuable input for the "Minimum Guidelines for Protection of Water Quality from Animal Wastes," which are now utilized statewide.

A reconstituted Committee met in 1974 and assisted in the development of a program regarding water quality control of irrigation return flows. This irrigation program was adopted by the State Board and transmitted to the Regional Boards in September, 1974 ("Committee Recommendations . . . for NPDES Permits," 1974). The Regional Water Quality Control Boards implemented this irrigation program, which was based on the following recommendations of the Committee:

> 1. Establish a data base by monitoring the volume, salt content, and sediment load in return flow; the volume and salt content of the irrigation supply water; and defer effluent limitations for a two-year permit period.
> 2. Allow water supplying and/or discharging entities to jointly file for single permits in logical hydrographic units; and also encourage water purveying as well as discharging entities to file, even though there may be no legal obligation to do so (Merrill and Johnson, 1975, p. 7).

This Committee has undergone restructuring twice since the first Committee completed its work in 1972.

The present Committee's membership represents broad agricultural and environmental interests and is primarily concerned with policy and programs which tend to serve the full spectrum of water quality and quantity concerns. In addition to the State and Regional Boards, the Committee provides advice and guidance to the State Departments of Water Resources and Agriculture and the U.S. Bureau of Reclamation.

2.2.8 Office of Attorney General

The Attorney General, as the chief law officer, receives broad environmental protection powers from Article V Section 13 of the California Constitution and from the California Government Code § 11042.

Article V Section 13 of the California Constitution provides:

> Subject to the powers and duties of the Governor, the Attorney General shall be the chief law officer of the state. It shall be his duty to see that the laws of the state are uniformly and adequately enforced. He shall have direct supervision over every District Attorney and Sheriff and over such other law enforcement officer as may be designated by law, in all matters pertaining to the duties of their respective offices, and may require any of said officers to make to him such reports concerning investigation, detection, prosecution and punishment of crime in their respective jurisdictions as to him may seem advisable. Whenever in the opinion of the Attorney General any law of this state is not being adequately enforced in any county, it shall be the duty of the Attorney General to prosecute any violation of the law of which the superior court shall have jurisdiction, and in such cases he shall have all the powers of a district attorney. When required by the public interest or directed by the Governor, he shall assist any district attorney in the discharge of his duties.

The Attorney General also possesses statutorily enacted enfironmental protection powers as the legal representative of state agencies, as having the power of attorney in the legal matters of the state, and as he directs and assists in legal actions brought by the counties (Cal. Govt. Code § 11043). The Attorney General is also authorized to protect the natural resources of the state from pollution, impairment or destruction (Cal Govt. Code, hereafter C.G.C. § 12600-12).

2.2.9 Additional Agency Involvement

California has three principal agencies with duties in the water rights area. These agencies are the Department of Water Resources, the State Water Resources Control Board and the California Water Commission. The Department of Water Resources is in charge of operating the State's water projects and programs. The State Board serves in addition to its water quality functions as a regulatory and adjudicatory agency in the water rights area. Its major responsibilities in this area include the maintenance of water rights records and the administration of the water appropriation statutes (C.W.C. § 4999-5008). The California Water Commission is basically an advisory board which serves as a watchdog over Department activities. The Commission also confers with and counsels the Director of the Department (C.W.C. § 150-166). See Figure 4.

2.3 SPECIAL LEGISLATION

The California Safe Drinking Water Bond Law of 1976 (C.W.C. § 13850 et. seq.) sets forth a Legislative finding which states that:

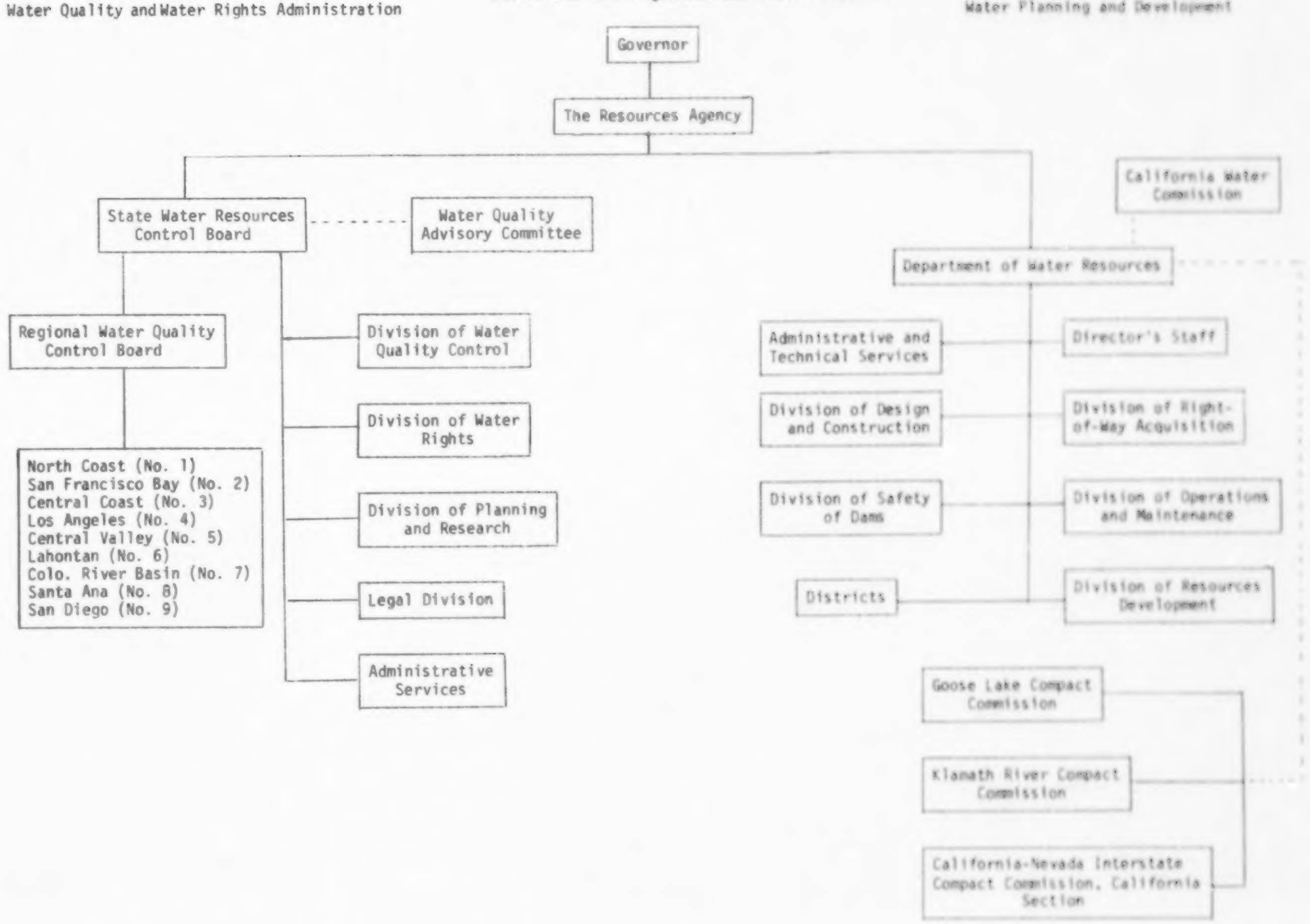
> it is necessary for the preservation of the health, safety, and welfare of the people of California that water supplied for domestic purposes be pure, wholesome, and potable and does not endanger the health or lives of human beings and that water is available in adequate quantity at sufficient pressure for health, cleanliness, and other domestic purposes (C.W.C. § 1385).

Further, legislative findings are set forth in the Clean Water Bond Law of 1974 (C.W.C. § 13985 et. seq.) in Section 13986 which provides that:

> clean water, which fosters the health of the people, the beauty of their environment, the expansion of industry and agriculture, the enhancement of fish and wildlife, the improvement of recreational facilities and the provision of pure drinking water at a reasonable cost, is an essential public need. Although the State of California is endowed with abundant lakes and ponds, streams and rivers, and hundreds of miles of shoreline, as well as large quantities of underground water, these vast water resources are threatened by pollution, which, if not checked, will impede the state's economic, community, and social growth. The chief cause of pollution is the discharge of inadequately treated waste into the waters of the state. Many public agencies have not met the demands for adequate waste treatment or the control of water pollution because of inadequate financial resources and other responsibilities, increasing population accompanied by accelerating urbanization, growing demands for water of high quality, rising costs of construction and technological changes mean that unless the state acts now the needs may soar beyond the means available for public finance. Meeting these needs is a proper purpose of the federal, state and local governments. Local agencies,

Figure 4

California Water Agencies and Their Functions


Water Quality and Water Rights Administration
Water Planning and Development
Governor
The Resources Agency
State Water Resources Control Board
Water Quality Advisory Committee
Regional Water Quality Control Board
North Coast (No. 1)
San Francisco Bay (No. 2)
Central Coast (No. 3)
Los Angeles (No. 4)
Central Valley (No. 5)
Lahontan (No. 6)
Colo. River Basin (No. 7)
Santa Ana (No. 8)
San Diego (No. 9)
Division of Water Quality Control
Division of Water Rights
Division of Planning and Research
Legal Division
Administrative Services
California Water Commission
Department of Water Resources
Administrative and Technical Services
Director's Staff
Division of Design and Construction
Division of Right-of-Way Acquisition
Division of Safety of Dams
Division of Operations and Maintenance
Districts
Division of Resources Development
Goose Lake Compact Commission
Klamath River Compact Commission
California-Nevada Interstate Compact Commission, California Section

> by reason of their closeness to the problem, should continue to have primary responsibility for construction, operation and maintenance of the facilities necessary to cleanse our waters. Since water pollution knows no political boundaries, and since the cost of eliminating the existing backlog of needed facilities for future needs will be beyond the ability of local agencies to pay, the state, to meet its responsibility to protect and promote the health, safety and welfare of the inhabitants of the state, should assist in the financing. The federal government is contributing to the cost of control of water pollution, and just provision should be made to cooperate with the United States of America. It is the intent of this chapter to provide necessary funds to insure the full participation by the state under the provisions of Title II of the Federal Water Pollution Control Act (33 U.S.C. § 1251 et. seq.) and acts amendatory thereof, or supplementary thereto.

The Geothermal Resources Act of 1965 (Cal. Stat., 1965, c. 1483, p. 3451, § 1) created a Geothermal Resources Board within the Department of Conservation (Public Resources Code, §3742). This Act commands owners of wells producing geothermal resources to use every reasonable effort to prevent:

> damage to life, health, property, and natural resources, to shut out detrimental substances from strata containing water suitable for irrigation or domestic purposes and from surface water suitable for such purposes, and to prevent the infiltration of detrimental substances into such strata and into surface water (P.R.C. § 3740).

Before abandoning any geothermal well, the owner must use every reasonable effort to protect any underground or surface water suitable for irrigation or domestic purposes from the infiltration or addition of any detrimental substances (P.R.C. § 3746).

2.4 RELATED LEGISLATION

The Waste Water Reuse Law of 1974 (C.W.C. § 460 et. seq.) allows the Department of Water Resources to conduct studies and investigations on the availability and quality of waste water and the uses of reclaimed waste water for beneficial purposes, including ground water recharge, municipal and industrial use, irrigation use, and cooling for thermal electric power plants (C.W.C. § 462, Emphasis added).

Section 461 of this act states:

> that the primary interest of the people of the state in the conservation of all available water resources requires the maximum reuse of waste water in the satisfaction of requirements for beneficial uses of water.

The California Land Conservation Act of 1965 (C.G.C. §51200 et. seq.) sets forth a legislative finding:

> (a) That the preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources, and is necessary not only to the maintenance of the agricultural economy of the state, but also for the assurance of adequate, healthful and nutritious food for future residents of this state and nation.
> (b) That the discouragement of premature and unnecessary conversion of agricultural land to urban dwellers themselves in that it will discourage discontiguous urban development patterns which unnecessarily increase the costs of community services to community residents.
> (c) That in a rapidly urbanizing society agricultural lands have a definite public value as open space, and the preservation in agricultural production of such lands, the use of which may be limited under the provisions of this chapter, constitutes an important physical, social, esthetic and economic asset to existing or pending urban or metropolitan developments . . .
> (e) For these reasons, this chapter is necessary for the promotion of the general welfare and the protection of the public interest in agricultural land (C.G.C. § 51220).

While this act does not deal with irrigation return flows, it does express the state's concern in preserving its agricultural lands.

2.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

Every report of a waste discharge, or of a material change in a waste discharge, must be accompanied by a filing fee, calculated on the basis of the total flow, volume, number of animals, or area involved (23 C.A.C. § 2200, See Environment Reporter, State Water Laws, Vol. 1, § 721:0519). A filing fee of $425.00 is required for irrigation return water (23 C.A.C. § 2200).

A material change may be any of the following:

> (a) Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste.
> (b) Significant change in disposal method, e.g., change from a land disposal to a direct discharge to water, or change in the method of treatment which would significantly alter the characteristics of the waste.
> (c) Significant change in the disposal area, e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area potentially causing different water quality or nuisance problems.
> (d) Increase in flow beyond that specified in the waste discharge requirements.
> (e) Increase in area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements.
> (f) Other circumstances which result in a material change in character, amount or location of waste discharge (23 C.A.C. §2210).

A "report of waste discharge" which is the equivalent of an application for an NPDES permit to discharge pollutants into navigable waters, must be filed within 180 days of the date on which it is desired to commence the discharge or in sufficient time to insure compliance with Section 306 of the FWPCA (P.L. § 92-500) and any other applicable water quality standards, effluent standards and limitations (23 C.A.C. § 2235.1).

The requirement for a "report of waste discharge" is satisfied if the discharger files a complete Refuse Act application, or a complete NPDES application (23 C.A.C. § 2235.1 (c)).

California classifies wastes which are discharged to land into three groups. Group one wastes consist of toxic substances and substances which could significantly impair the quality of usable water. Wastes of agricultural origin under this classification include chemicals such as pesticides or chemical fertilizers and discarded containers of chemicals unless adequately cleansed (23 C.A.C. § 2520).

Group two wastes of agricultural origin include:
(1) Plant residues from the production of crops including, but not limited to stalks, vines, green drops, culls, stubble, hulls, lint, seed, roots, stumps, prunings, and trimmings.
(2) Manures.
(3) Dead animals or portions thereof.
(4) Adequately cleansed pesticide containers (23 C.A.C. § 2521).

Group three wastes do not have a classification dealing with wastes of agricultural origin (23 C.A.C. § 2522). Disposal of these wastes can only be accomplished at sites which have been approved by the appropriate Regional Board.

The State Board shall adopt guidelines which set forth minimum standards for the disposal of animal wastes (23 C.A.C. § 2555), and shall distribute such guidelines to the regional boards.

Programs in the Central Valley Region dealing with agricultural water quality problems are indicative of programs in other regions and will be discussed in detail. A monitoring and planning program constitute a water quality control program for agricultural activities.

Monitoring programs will determine the quality and quantity of supply waters entering agricultural areas and return flows from agricultural areas entering streams and/or receiving waters. A monitoring program is being carried out under permits which have been issued to agricultural areas for either two or five-year periods.

Through the planning process, agricultural discharges which can be controlled by a permit are to be identified and permits issued. These programs will develop the best management practices for agriculture which will reduce pollutant loads to surface waters, and develop policies or guidelines for individual farm operations and basinwide management control plans which will consider water supply and basinwide management problems. As has been stated before, the California approach to meeting EPA's requirements of issuing permits for irrigation return flows as a point-source is to identify all entities within an irrigation system or subsystem from which discharges can be identified and monitored, and have these entities cosign the permit. This satisfies EPA and enables the state to decentralize monitoring and management to the local entities while retaining control and enforcement if necessary.

On August 12, 1974, the Agricultural Water Quality Advisory Committee made recommendations on the monitoring of irrigation return flows (See Appendix B). Guidelines for the protection of water quality from animal wastes were recommended by the Committee and adopted by the State Board. These guidelines were designed to protect both surface and ground water from livestock operations and provide that:[3]

> Surface water protection is to be accomplished through no discharge except for excess runoff above a 10-year 24-hour rainstorm.
>
> Croplands receiving liquid or dry animal waste are to be managed to minimize runoff which essentially prohibits any discharge of manured water from the cropland.
>
> Ground water protection is to be accomplished by controlling the application rates of discharged waste to cropland. The primary limiting factor controlling discharge is the nitrogen requirement of the crop-soil relationship.

Confined Animals: Once it was concluded that the initial agricultural water quality control effort was to be directed towards confined livestock operations such as dairies and beef feedlots; a further decision w[illegible] made to make initial contact through farm organizations and agencies, public and private, rather than directly with dairymen and feelot operators. Some steps taken by the Central Valley Board to control water pollution of confined animal operations in the Central Valley of California were:
1. An agreement was made between the Central Valley Board and the State Department of Food and Agriculture for that Department to assist in surveying each dairy and feedlot with respect to compliance with the SWCRB Guidelines.
2. The Regional Board staff assisted the California Farm Bureau Federation and the dairy industry to establish county dairy committees for communication and to receive industry input.
3. Numerous meetings and dairy tours were arranged and conducted by Dairy and Livestock Farm Advisors of the University of California Cooperative Extension Service.

It took two years to complete the dairy-beef feedlot survey as all commercial enterprises were reviewed regardless of the number of confined animals. The survey determined that approximately 285 out of 2200 dairies in the Central Valley had significant water quality problems associated with discharge from the farm enterprise and many of these discharges were to surface waters. Also, over one-half of the 57 beef feedlots in the Central Valley likewise failed to meet the Guidelines. Subsequent to the surveys, schedules were developed which allowed approximately one full calendar year for each operation to come into full compliance. During the compliance period, all of the feedlots, and all except 24 of the dairies, constructed facilities to come into compliance without enforcement action. Consequently, the Central Valley Board now needs to take enforcement action against only 24 dairies to obtain complete compliance. Stated another way, no enforcement action was necessary to obtain full compliance by all beef feedlots and over 90 percent of the 285 problem dairies complied without formal action. This means that out of 2200 dairies in the Central Valley, only one percent will receive a waste discharge requirement at this time.

---

[3] The following material is from Merrill and Johnston, 1975.

Due to the vast extent of the irrigated lands and to the large number of farm enterprises involved, the Central Valley Board has found it necessary to provide a rationale for programs which would permit a small staff to effectively administer the agricultural pollution workload. Under such rationale, concepts of control technology and lead-times for solutions are still being developed.

Appendix C summarizes six Central Valley pollution problems and the control technologies viewed most feasible at this time. The technologies are separated into "hardware-types" involving basin or area facilities, farm or local facilities, and on-farm management, and are rated as to the feasibility of each.

In order to understand agricultural pollution problems in the Central Valley and the appropriate technologies, they are discussed as follows:[*]

1. Sediment

The problem is limited to areas having substantial irrigation return flows to surface streams. Pre-reconnaissance estimates by Central Valley Board staff are that 25 percent of the irrigated lands in the Valley may contribute significant soil sediment discharges in tailwater runoff to rivers and streams. Also contributing sediment loads are urban lands, forest lands, rainfed croplands and other land use types. Absolute control (no discharge) will probably not be possible to achieve. Control technology will likely utilize improved irrigation management, on-farm sumps to desilt tailwater runoff, and possibly larger sumps use by several farmers.

2. Nutrients

The concern is mainly with nitrate levels in surface waters which may cause excessive algae blooms and associated problems. Phosphates are generally not a limiting factor in algae growth in surface waters of the Central Valley. State and federal agency studies indicate that substantial amounts of high nitrate effluent could be discharged into surface waters of the Valley in the future. Subsurface drainage or tile effluent in the Central Valley is characteristically high in salinity, variable in nitrates, low in phosphates, and free of sediment. This effluent will be from subsurface drainages of irrigated lands containing high levels of native, mineralized nitrates in contrast with high nitrate effluent resulting from applied nitrogenous fertilizers. Studies by the University of California indicate that it may be practical to control this type of nitrate emission from most areas through on-farm management of the application rates of nitrogenous materials.

Research studies also indicate that it will be extremely costly to remove large nitrogen loads expected from subsurface tile line effluent in the San Joaquin Valley using "end-of-pipe" technology. On the other hand, other methods of treatment technology to remove nitrates from collected subsurface tile drainage effluent show promise, but are still in the early research and developmental stages.

3. Salinity

Salinity buildup in surface waters is generally accepted to be the principal irrigation water quality control problem in the Central Valley. Even though salinity buildup is due mainly to a natural phenomenon (evapotranspiration by irrigated crops) there are other contributing sources such as the leaching of salt from soils that were highly salinized through the evapotranspiration process prior to being irrigated and upwelling connate brines under artesian pressure. It is generally understood by soil scientists and irrigation engineers that some leaching of salt from soils must take place to maintain a continuing irrigated agriculture. The best technology for treating salinity problems consists of transport from saline return flows to acceptable salt sinks, such as the ocean or evaporation ponds. The drainage effluent will have to be collected and transported through on-farm tile drain systems, area collection systems, and larger sub-basin drains. Among the facilities to be used in the Central Valley of California are the San Luis Drain and Tulare Lake Water Storage District evaporation ponds. The still experimental technique of "minimized leaching" and conservative use of irrigation water within reasonable farm management constraints may become elements of a general solution. Likewise, it is probable that improved water management will be required at three levels: on-farm, sub-area or district, and river basin in order to achieve substantial improved salt management and control.

4. Pesticides

Rapid change in types of pesticides and increasing controls on usage and application are improving the outlook on pesticide-caused water quality problems. Pesticide materials and application restrictions are steadily being upgraded in order to minimize or essentially eliminate pesticide hazards to the environment, to farm workers, and to consumers of farm products. There has been no evidence of serious problems in the Central Valley arising from agricultural application of pesticides. However, there is still need for further investigation and evaluation of pesticide and pesticide breakdown products in relation to their tie-up and movement through the plant-water-soil system.

---

[*] The following material was extracted from Merill and Johnston, 1975.

Under normal circumstances and in the foreseeable future, on-farm management probably will remain the principal control technology for any given pesticide material. The Central Valley Board will work with county Agricultural Commissioners and the Department of Food and Agriculture to help control any problems that may develop in regard to misuse of pesticides. The Regional Boards or the State Board may call upon the California Department of Fish and Game, the California Department of Food and Agriculture, or the University of California, Division of Agricultural Sciences for assistance to investigate or evaluate chronic or subacute problems in aquatic organisms.

5. Animal Waste

Prior to implementation of the Central Valley Board's program, the most obvious of the agricultural pollutants in the Central Valley were animal wastes. Through experience it was found that a no-discharge policy can be applied to control pollution from animal wastes with minor exceptions of certain rainfall events. In other areas "no discharge" may not be a valid control due to high costs to cope with such factors as steep topography, unavailability of irrigated cropland, or high rainfall. The elements used in animal waste control facilities for dairies and feedlots in the Central Valley are (a) collection of manured wastewater and manured rainfall runoff, (b) storage during the non-irrigation period, and (c) blended application of stored, liquid wastes with irrigation water to cropland. Considerable on-farm management is needed in addition to necessary facilities.

6. Processing Waste

This category of waste includes all farm-level facilities used to process vegetables, fruit, nuts, and other farm commodities. This problem is similar to animal waste except in the Central Valley of California fewer potential pollution problems exist in this category. Control technologies are similar to those used with animal waste.

2.6 CASE LAW APPLICABLE TO AGRICULTURE

In 1857, the Bear River and Auburn Water and Mining Co. v. the New York Mining Co (8 Cal. 327, 68 Am. Dec. 325, 1857) decision was handed down by the Supreme Court of California. The Supreme Court held that a prior appropriator is entitled to the water so undiminished in quantity as to leave a sufficient amount to fill his canal or ditch, as it existed at the time of subsequent appropriations. However, as to the deterioration of the quality of the water, it is deemed damnum obsque injuria, before it reaches the ditch of the prior appropriator, since it is being used for mining purposes (See also Esmond v. Chew, 15 Cal. 137, 1860).

In Potter v. Fremont (47 Cal. 165, 1873), the California Supreme Court held that in an action for damages which were caused by the pollution of the water of a stream which ran over the plaintiff's land, special damages could not be proved unless they were alleged in the complaint. Furthermore, in such a case, proof of the diminution of the rental value of the farm was inadmissible if the complaint failed to allege that the plaintiff rented the farm.

Twelve years after the Potter decision, the Supreme Court of California held that a corporation could be enjoined upon an ex parte application, without notice to it, from depositing in or discharging mining debris into certain streams (Eureka Land and Yuba Canal Co. v. Superior Court of the County of Yuba, 66 Cal. 311, 5 490, 1885).

The Supreme Court of California also held in 1895 that a complaint for nuisance, which charged the defendant with polluting the waters of a river with offensive matter from a sawmill, outhouses, stables and other fixtures embraced a finding that the cause of pollution was a hog pen and a manure pile from the stable (People v. Elk River Mill and Lumber Co., 107 Cal. 214, 40 P. 486, 1895). The court further held that where there are lower riparian owners, one has no right to pollute the waters of a stream by maintaining a cow stable and hog pen on its banks. A riparian owner is entitled to a substantially unpolluted stream (Crum v. Mt. Shasta Power Corp., 117 Cal. App. 586, 4 P.2d 564, 1931; 220 Cal. 295, 30 P.2d 30, 1934; MacArthur v. Mt. Shasta Power Corp., 3 Cal. 2d, 704, 45 P.2d 807, 1935).

In a subsequent suit, involving the above defendant, the Supreme Court held that an upper riparian owner could not be enjoined from operating its sawmill by a city water company which subsequently appropriated lower waters to supply the public on the ground that it violates the Penal Code § 374 which prohibited the pollution of streams from which the inhabitants of towns are supplied (People v. Elk River Mill and Lumber Co., 107 Cal. 221, 40 P. 531, 1895). Further, a nonriparian appropriator has no right of action for the pollution of the water by a prior riparian owner who discharges sewage into the stream (Conrad v. Arrowhead Hot Springs Hotel Co., 103 Cal. 399, 37 P. 386, 1894).

A riparian owner cannot be enjoined from cutting down trees on the ground that the water is thereby rendered unfit for domestic use by an owner downstream where it does not appear that the quality of the water has been materially impaired (Fisher v. Feige, 137 Ca. 39, 69 P. 618, 1902). It is a nuisance to throw refuse mineral matter into waters, thereby rendering the water offensive and unwholesome (McCarthy v. Gaston Ridge Mill and Mining Co., 144 Cal. 542, 78 P. 7, 1904, Joerger v. Pacific Gas and Electric Co., 207 Cal. 8, 276 P. 1017, 1929, Thompson v. Kraft Cheese Co. of California, 210 Cal. 171, 291 P. 204, 1931).

In Dripps v. Allison's Mines Co. (45 Cal. App. 95, 187 P. 448, 1919), the California Supreme Court held that a first locator on mining ground has no right to allow tailing to run free into a stream and render the mining claims of subsequent locators downstream valueless.

In Holmes v. Nay (186 Cal. 231, 199 P. 325, 1921), the Supreme Court held that a lower riparian could complain of muddying and pollution of water by an upper riparian owner except insofar as it is a reasonably necessary incident of the upper riparian's use of the water. Thus, the court applied the "sic utere two, ut abenum non laedas" maxim.

In Meridian L.T.D. v. City and County of San Francisco (13 Cal. 2d 424, 90 P.2d 537, 1939), the Supreme Court of California held that the threatened pollution of water because of the city's increased storage would not justify injunction against the city's use of its enlarged facilities, in absence of actual pollution. However, in Thome v. Honcut Dredging Co. (43 C.A.2d 737, 111 P.2d 368, 1941), the Supreme Court of California held that a riparian's action to enjoin pollution of a stream was given a broad and complete remedy as the law allowed by the enjoining of the defendant from materially polluting the stream (See also, Wright v. Best, 19 C. 2d 368, 121 P.2d 702, 1942).

In Ingram v. City of Gridley (100 C.A. 2d 815, 224 P.2d 798, 1951), the District Court of Appeals for the Third District held that damages for permanent injury to land caused by discharged sewage is measured by depreciation in market value of the property injured.

In late 1975, the California Court of Appeals of the 1st Appellate District No. 1 had before it a case of first impression. E.D.F. v. East Bay Municipal Utility District (8 ERC 1535) surrounded the constitutional rights of direct and indirect water users of the water resources of California. Prior to 1975, the law was settled that traditional water users maintaining claims to water under the evolved property right concept in water would have their rights protected under the water law of California. However, in this year the East Bay Municipal District contracted with the Bureau of Reclamation to divert water from the upper Mexican River when the Auburn-Folsom unit of the Central Valley Project was completed to serve as supplemental water supply for its customers in 1985 according to its anticipated future requirements. The plaintiffs in this case are several non-profit corporations dedicated to protecting and preserving the natural environment, who assert that the constitutional declaration stated in the 1928 amendment is designed to encompass the preservation of environmental amenities, as well as direct water use (for the language of the constitutional amendment, see section 100 of the California Water Code).

In order to resolve the issue of whether or not the constitutional mandate could be so broadly construed so as to encompass all rights to the beneficial use of rivers and streams of the state, including those sportsmen and others who are still able to find opportunities to enjoy outdoor recreation, the court began with an historical analysis. In looking at the resource, the court noted the importance of water to the state in quoting from Gin S. Chow v. the City of Santa Barbara, (217 Cal. 673, at 702, Cal., 1933) that "the conservation of other natural resources is of importance, but the conservation of waters of the state is of transcendant importance. Its waters are the very life-blood of its existence." Both the quantity and quality aspects have been explicitly summarized in Joslin v. Marin Municipal Water District, so the court notes that even prior to the constitutional amendment there was a successful effort of the decisions to keep pace with the changing conditions of the growth of the state. In fact, the reason for the 1928 constitutional amendment was the decision in the Herming Haus v. Southern California Edison Company, (200 Cal. 81, Cal. 1926), which struck down an earlier legislative attempt to curtail riparian rights. The Herming Haus case confirmed the 1909 decision of Miller Lux v. Madera Canal Co. (155 Cal.,59 at 64), which stated that, as against an appropriator who seeks to divert water to non-riparian lands, the riparian owner is entitled to restrain any diversion which will deprive him of the customary flow of water which is or may be beneficial to his land. He is not limited to any measure of "reasonableness." Thus the 1928 constitutional amendment was introduced to "prevent the waste of waters of the state resulting from an interpretation of our law which permits them to flow unused, unrestrained, and undiminished to the sea, and is an effort on the part of the state in the interest of the people of the state to conserve our waters without interference with the beneficial uses to which such waters may be put by the owners of water rights including riparian owners" (Gin. S. Chow v. the City of Santa Barbara, 217 Cal. 673 at 700, Cal. 1933).

In Peabody v. the City of Vallejo, 1935, 2 California 2nd 351, the court said that the constitutional amendment applies to the use of all waters under whatever right the use may be enjoyed . . . "when the supply is limited, public interest requires that there be the greatest number of beneficial uses which the water supply can yield" (pp. 367-368).

The judge in EDF v. EBMUD (8 ERC 1542) noted, "that the real lesson to be gleaned from our water law history, therefore, is the courts have been acutely aware of the necessity for flexibility in constructing the law to keep pace with the needs and transformations constantly taking place in our rapidly changing society." An interesting observation was made by the court judge in the EDF case. He noted that the trial judge was very alert in saying that he had no great difficulty construeing reasonable under the 1928 constitutional amendment to be not fixed at the time when the amendment was enacted, but rather applied to concepts of reasonableness today to improve environmental factors such as recreation, fish and wildlife, and uses of the river. But he did note that since there were no cases that had reached the appellate level to decide the application of this consitutional amendment to involve other than competing claims to property rights and water, that it would be presumptuous for the trial court to broadly construe it to apply to other water disputes of a kind not heretofore sanctioned by case law.

With respect to this issue, the first issue of the case, the court held that they would have no difficulty holding that article 14, section 3 (Section 100 of California Water Code) can only reasonably be interpreted as an unqualified expression of fundamental policy by the people of California that the general welfare requires that all of "the water resources of the state be put to beneficial use to the fullest extent to which they are possible" (8 ERC 1544).

The second issue of the case which may have a very relevant bearing upon irrigation return flow is whether the constitutional amendment requires the recycling or reusing of water in order to prevent waste or an unreasonable use of the water. The court noted that it had been previously decided in Meridian Ltd. v. San Francisco (13 Cal. 2nd 424, Cal. 1939) that the constitutional restriction against committing waste is one that is imposed on all water users including those who have additional property rights. In that decision, waste was acceptably defined with respect to use of water as "to use needlessly or without valuable results, to employ prodigally or without any considerable return or effect and to use without serving any purpose the term is necessarily relevant" (Ibid. at p. 447).

Realizing that the term was relative, the court however noted in Tulare District v. Lindsay-Strathmore District (Ibid. at p. 567) that: "what is a beneficial use at one time may, because of changed conditions, become a waste of water at a later time." Although the appellate court did not decide whether recycling and reusing is necessary in order to prevent waste, it did remand the fact to the trial court in accordance with previous states' judicial decisions to let the trier of fact determine this issue.

The next issue that was decided by the court was a very interesting one as far as the possible roles states may have in causing water users in reclamation project areas to be more efficient in their water use. Although the nature of the action was an issue raised by plaintiffs in this case to question the authority of the irrigation district to purchase federal projects water as determined under federal law, the discussion of the court and its review of previous decisions is very important to the water use efficiency issue in irrigation return flow. The court noted that the state of California adopted a law which allows irrigation districts to contract with the federal government in project areas. This is very similar to legislation found in most of the seventeen western states. It noted that in these project areas that "the federal government with federal funds has lawfully developed water - project water - that without the project would not have been developed" (Quoted from Ivanhoe II). The significant case law that they discussed was an issue raised in Ivanhoe I (Ivanhoe Irrigation District v. All Parties, 47 Cal. 2nd 597, California 1957) on whether or not federal law was superior to the state law in reclamation areas. The state court in Ivanhoe I applied the trust theory under state law to hold that the federal government could acquire no title to appropriative rights free of the trusts in the state for the benefit of its people.

Ivanhoe I was reversed, however, by the Supreme Court of the United States in Ivanhoe Irrigation District v. McCrecken (357 U.S. 275, 1958). The Supreme Court of the United States held there that "we read nothing in Section 8 that compels the United States to deliver water on conditions imposed by a state" (Ibid. at page 292). The court was referring to Section 8 of the Reclamation Act of 1902 that says that nothing in the act can be construed as affecting, or intending to affect, or to in any way interfere with the laws of any state or territory relating to the control, appropriation, use or distribution of water used in irrigation. This decision was followed by Ivanhoe II in which the Supreme Court of California repudiated the trust theory referring to it as "sheer dicta" (Ivanhoe Irrigation District v. All Parties, 53 Cal. 2nd 692 at page 716, Cal. 1960). The court went further on to state that "as we read Section 8, it merely requires the United States to comply with state law when in the construction and operation of a reclamation project it becomes necessary for it to acquire water rights or the interest therein" (Ibid. at page 708).

The result of Ivanhoe II was to declare the doctrine of federal supremacy in cases in which the federal government has, by previous ownership or appropriate action, secured the water in the name of the federal government.

Thus, we have a situation in which many of the largest irrigated areas in the western part of the United States are federal project areas in which the irrigation districts receive their water by contract from the Bureau of Reclamation. If the holding in California court's decision of Ivanhoe II is to apply to the rest of the western states, then the concept of the public trust may still exist, but with a different orientation. The trust would now exist in fact where irrigation districts do not utilize their water efficiently as appropriate under the circumstances, and that the Bureau of Reclamation does not impose standards of efficiency, that the federal agency is violating its trust to the American Public. The result of EDF v. East Bay Municipal Utility District reiterates this rule of law at least in California. Whether this is the conclusive rule for the seventeen western states will depend upon an interpretation of state statutory provisions permitting irrigation district to contract with the federal government, and the conditions under which the federal government acquired water rights in the state to operate reclamation projects.

2.7 INFORMATION SOURCES

__________, The California Water Plan Outlook in 1974, Summary Report, Dept. of Water Resources Bul. No. 160-74, The Resources Agency, Nov. 1974.

__________, Colorado River Board of California, Annual Reports, 1964 to present.

__________, Committee Recommendations Regarding Applications for NPDES Permits, Agricultural Water Quality Advisory Committee Minutes, Aug. 12, 1974, California State Water Resources Control Board, Sacramento, Cal.

__________, Determination of Rights to the Use of Water in California, California State Water Resources Control Board, Sept. 1975, 32 pages.

__________, The Porter-Cologne Water Quality Control Act, California State Water Resources Control Board, July, 1974, 72 pages.

__________, Regulations Concerning Waste Discharge Requirements, National Pollutant Discharge Elimination System, California State Water Resources Control Board, Sept. 1974, 57 pages.

__________, Report on Agricultural Activities No. 2, Central Valley Region Publication, 1976.

__________, Research Needs for Water Resource Control in California, State Water Resources Control Board, Publication No. 48, April, 1973.

__________, Rights - Quality, California State Water Resources Control Board, Aug. 1975, 21 pages.

__________, Statutory Water Rights Law, California State Water Resources Control Board, May 1975, 62 pp.

__________, Waste Discharge Requirements for Waste Disposal to Land; Disposal Site Design and Operation Information, State Water Resources Control Board, Oct. 1974.

Ayers, R., and R. Coppock, Salt Management: California's Most Complex Water Quality Problem, Univ. of Cal. Agricultural Extension, Division of Agricultural Science, June, 1974.

Barnhizer, David R., "Environmental Policy-Making: Reflections on the Process of Technology Assessments," 13 Santa Clara Lawyer 675, 1972-1973.

Burton, Richard C., "Pollution of Ground Water," 1 U.C.D. Law Review 141, 1969.

Chernove, Sheldon, "California Environmental Quality Act and Eminent Domain: Failure to Comply with C.E.Q.A. as a Defense to Condemnation," 8 Loyola of L.A. Law Review 734, 1975.

Coppock, Raymond H., Water Development and the Environment: Issues of Water Policy in California, Cooperative Extension, 4 of Calif. Rept. No. 27, 1974.

Couzens, J. Richard, "State Control of Water Pollution: The California Model," 1 U.C.D. Law Review 1, 1969.

Cunningham, Richard B., "San Joaquin Delta: Is Negotiation a Solution?" 1 U.C.D. Law Review 209, 1969.

Dunnigan, Dixie, "Torts--Liability of Independent Tort-Feasors-Pollution of Streams," 1 Southern California Law Review 382, 1928.

Gnoss, George H., Jr., "Special Problems of Water Pollution: The Private Sector," 1 U.C.D. Law Review 105, 1969.

Haydel, Doug, "Regional Control of Air and Water Pollution in the San Francisco Bay Area," 55 California Law Review 702, 1967.

Holburt, Myron B. et al., California's Stake in the Colorado River, Colorado River Board of California, June 1969.

Johanson, Stephen H., "California's Environmental Quality Act--A Significant Effective or Paper Pollution?" 5 Pacific Law Review 26, 1974.

Lynch, Thomas C. and Stevens, Jan S., "Environmental Law, the Uncertain Trumpet," 5 University of San Francisco Law Review 10, 1970.

MacDiarmid, John MacLeod, "The State Water Plan and Salinity Control in the Sacramento-San Joaquin Delta of California," Association of Pacific Coast Geographers, Yearbook, vol. 37, 1975.

McKee, Jack E. and Wolf, Harold W., Water Quality Criteria, State Water Resources Control Board, publication No. 3-A, 1974.

Merrill, R. E. and Johnston, W. R., Agricultural Water Quality Control Problems, presented at the 1975 Annual Meeting of the American Society of Agricultural Engineers, University of California at Davis, 1975.

Moskovitz, Adolphus, "Quality Control and Re-use of Water in California," 45 Calif. Law Review 586, 1957.

Robie, Ronald B., "Water Pollution: An Affirmative Response by the California Legislature," 1 Pacific Law Review 2, 1970.

Schwartz, Richard N., "Water Quality Control in California: A Regional Approach," 7 California Western Law Review 138, 1970.

Skidmore, Leslie R., III, "Nitrate Pollution and the C.E.Q.A.: The Appropriate Solution to a Neglected Problem," 12 California Western Law Review 122, 1975.

Stewart, T. I., Irrigation in California, A Report to the State Water Resources Control Board, Univ. of Cal. at Davis, June, 1975.

Wagoner, James P., "Environmental Protection in California: Court Action Powers of State and Local Government Attorneys," 14 Santa Clara Lawyer 296, 1973-74.

Waldo, C. T., "Evaluation of California Water Right Law," 18 Southern California Law Review 267, 1945.

Weisbecker, Leo W. et al., An Environmental Monitoring Program: For the Sacramento-San Joaquin Delta and Suisun Bay, State Water Resources Control Board, pub. no. 40, May 1970.

Younger, Evelle J., "Environmental Protection in California: Perspective of the Attorney General," 5 Pacific Law Journal 19, 1974.

APPENDIX 2-A

California Regional Water Quality Control Board, Central Valley Region (Order No. 75-184; NPDES No. CA0080268): Waste Discharge Requirements for Sacramento Valley Water Quality Committee

The California Regional Water Quality Control Board, Central Valley Region (hereafter Board), finds that:

1. The Sacramento Valley Water Quality Committee (herafter discharger), by NPDES No. CA 0080268 dated 13 December 1974, has applied on behalf of its members for waste discharge requirements to discharge wastes under the National Pollutant Discharge Elimination System.
2. The discharger represents lands and entities as shown on the map, Attachment A, and list, Attachment B.
3. The discharger's members presently discharge irrigation return waters from agricultural drainage systems on the west and east side of the Sacramento Valley into the Sacramento and Feather Rivers, waters of the United States, at points indicated on Attachment A.
4. The application describes 13 major existing discharges as follows:

Discharge D-1	Butte Slough
Discharge D-2	Wadsworth Canal
Discharge D-3	Sacramento Slough
Discharge D-4	Reclamation District 784
Discharge D-5	Jack and Simmerly Slough
Discharge D-6	Colusa Drain
Discharge D-7	Reclamation District 787
Discharge D-8	Reclamation District 70
Discharge D-9	Reclamation District 108
Discharge D-10	Reclamation District 787
Discharge D-11	Reclamation District 1001
Discharge D-12	Reclamation District 1000
Discharge D-13	Yolo Bypass

5. An Interim Water Quality Control Plan for the 5A Basin was adopted by the Board on 15 June 1971. The Interim Basin Plan contains water quality objectives for the Sacramento and Feather Rivers.
6. The beneficial uses of the Sacramento River and Feather River are: domestic, municipal, agricultural and industrial supply; recreation; esthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife and other aquatic resources or preserves.
7. The discharger and interested agencies and persons have been notified of the Board's intent to prescribe requirements for the discharge and have been provided with the opportunity for a public hearing and the opportunity to submit their written views and recommendations.
8. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

A. Provisions:

1. The discharger shall comply with the attached Monitoring and Reporting Program as ordered by the Executive Officer.
2. The discharger shall comply with all items of the attached "Standard Provisions" and "Reporting Requirements."
3. This Order expires 25 July 1977. The discharger must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

I, JAMES A. ROVERTSON, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 25 July 1975.

This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Water Pollution Control Act or amendments, thereto, and shall take effect at the end of 10 days from date of adoption provided the Regional Administrator, Environmental Protection Agency, has no objections.

Monitoring and Reporting Program for Sacramento Valley Water Quality Committee

Discharge Monitoring

A sampling station shall be located at the following locations (refer to locations on map, Attachment A):

Discharge Points,	Serial No.	Location
Sutter Bypass	D-1	Butte Slough near concluence with Sutter Bypass
	D-2	Wadsworth Canal near confluence with Sutter Bypass
	D-3	Sacramento Slough near confluence with Sutter Bypass
Feather River	D-4	Reclamation District 784's drain near confluence with Feather River
	D-5	Jack and Simmerly Slough near confluence with Feather River
Colusa Basin Drain	D-14	Colusa Drain at crossing with Highway 20
	D-6	Colusa Drain at Knights Landing
	D-7	Reclamation District 787's drain near confluence with Colusa Drain
Sacramento River	D-8	Reclamation District 70's drain near confluence with Sacramento River
	D-9	Reclamation District 108's drain near confluence with Sacramento River.
	D-10	Reclamation District 787's drain near confluence with Sacramento River
	D-11	Reclamation District 1001's drain near confluence with Sacramento River
	D-12	Reclamation District 1000's drain near confluence with Sacramento River
	D-13	Yolo Bypass
	D-15	Sacramento River (West Bank) above Colusa Drain
	D-16	Sacramento River (West Bank) below Colusa Drain
Supply Points:	S-1	Sacramento River at Hamilton City

Supply Points	Serial No.	Location
	S-2	Feather River at Termalito Wells-ground water

The following shall constitute the discharge monitoring program:

Constituent	Discharge Serial No.	Units	Type of Sample	Minimum Frequency of Analysis
a. Flow	D-1, D-2, D-3, D-4, D-5, D-6, D-7, D-8, D-9, D-10, D-11, D-12, D-13, D-14, D-15, D-16	AF/month		Monthly
b. Specific Conductance (EC)	D-1, D-2, D-3, D-4, D-5, D-6, D-7, D-8, D-9, D-10, D-11, D-12, D-13, D-14, D-15, D-16	micromohs/cm @ 25°C	Grab	Monthly
c. Suspended Solids	D-1, D-2, D-3, D-4, D-5, D-6, D-7, D-8, D-9, D-10, D-11, D-12, D-13, D-14, D-15, D-16	mg/l	Grab	Monthly

The following shall constitute the monitoring program for supply sources:

a. Flow	S-1, S-2,	AF/month		Monthly
b. Specific Conductance (EC)	S-1, S-2	micromohs/cm @25°C	Grab	Monthly
c. Suspended Solids	S-1, S-2	mg/l	Grab	Monthly

General information on ground water within the basin can be supplied by utilizing existing data or summaries available from DWR or other entities.

If the discharge is intermittent rather than continuous then a representative sample shall be taken of each such intermittent discharge. The discharger shall monitor and record data for all of the parameters listed in the discharge monitoring schedule, after which the frequencies of analysis listed in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the discharger be required to monitor and record intermittent data more often than twice the frequencies listed in the schedule.

The discharger shall implement the above monitoring program within 37 days of the effective date of this order.

Montioring reports shall be submitted by the dates in the following schedule:

Monitoring Period	Report Due
1st Six Months	Within 60 days after end of monitoring period
2nd Six Months	Within 60 days after end of monitoring period
3rd Six Months	Within 60 days after end of monitoring period
4th Six Months	Within 60 days after end of monitoring period

Irrigation and Water Districts
Brown Valley Irrigation Dist.
Cordua Irrigation Dist.
Glenn-Colusa Irrigation Dist.
Joint Water District Board
Biggs-West Gridley Water Dist.
Butte Water District
Richvale Irrigation Dist.
Sutter Extension Water Dist.
Hallwood Irrigation District
Kanawha Water District
Maxwell Irrigation District
Princeton-Codora-Glenn Irrigation District
Provident Irrigation Dist.
South Sutter Water District

Reclamation Districts

Reclamation District No. 10
Reclamation District No. 70
Reclamation District No. 108
Reclamation District NO. 479
Reclamation District No. 730
Reclamation District No. 777
Reclamation District No. 784
Reclamation District No. 787
Reclamation District No. 827
Reclamation District No. 833
Reclamation District No. 1000
Reclamation District No. 1001
Reclamation District No. 1004
Reclamation District No. 1500
Reclamation District No. 1600
Reclamation District No. 1660
Reclamation District No. 2035
Reclamation District No. 2047
Reclamation District No. 2054
Reclamation District No. 2056

Drainage Districts
Butte Creek Drainage District
Drainage District No. 1 (Butte County)
Drainage District No. 2 (Butte County)
Drainage District No. 100 (Butte County)
Drainage District No. 200 (Butte County)

Individual Landowners
Davis Ranches
M & T, Inc.
Orland Unit Water Users' Association
Garden Highway Mutual Water Company
Parrott Investment Company
Wallace Bros.
Newhall Land & Farming Company
Willow Creek Mutual Water Company

Total of all co-signers = 47.

APPENDIX 2-B: AGRICULTURAL WATER QUALITY ADVISORY COMMITTEE RECOMMENDATIONS ON MONITORING IRRIGATION RETURN FLOW

1. The irrigation return flow monitoring program should initially include:
    a. Specific conductance as a measure of salinity. Additionally, a correlation may be developed with total dissolved solids at the request of the Regional Board (Executive Officer).
    b. Suspended solids. More refined analysis may be required by the Regional Water Quality Control Board on an infrequent basis.
    c. Flow of the discharge.
2. Other parameters may be studied or monitored at certain locations where such constitutents are suspected to caused a problem.

These parameters should jointly and cooperatively be investigated by the discharger and state and federal agencies. The principal state agencies involved in cooperative investigations should be the Regional Water Quality Control Boards and the Department of Water Resources. They should fully utilize the expertise of other agencies, in particular the University of California and the University of California Water Resources Center. If investigation shows that these or other parameters are water quality problems caused by irrigation, then the AgWQAC and the State should develop a monitoring program to be carried out cooperatively by the dischargers and the State, depending on the complexity of the monitoring program required. In view of the fact that a considerable amount of sampling, both current and historic, has been accomplished on many of these parameters, evaluation of these data should be made before deciding what needs further investigation.

3. In many cases adequate data regarding the quality of water supplies may be available from local, state or federal agencies. In such cases discharger monitoring of water supplies should not be required as part of the permit. If adequate water quality data on water supplies is not available, the discharger should be required to furnish data regarding the quality of incoming waters. Such water supply monitoring should include approximately 80 percent of the total supplies by flow. Water supply monitoring need not be required on as frequent a basis as discharge monitoring. Generally semi-annual monitoring of supplies will be sufficient.

4. Quality Control: The State (Regional Water Quality Control Boards and Department of Water Resources) should provide assistance in quality control of the monitoring program. Sampling analysis and techniques, and frequency of sampling will be agreed upon between the discharger and the Regional Water Quality Control Boards.

5. Monitoring Period: Monitoring will be made during the period of discharge of irrigation return flows. This is normally, though not always, the irrigation season.

6. Monitoring of Flow (item 1.c.): The method, location, and frequency of measurements will be subject to approval of the Regional Water Quality Control Boards. Reasonable estimates of flow by knowledgeable persons may be acceptable.

APPENDIX 2-C

CONTROL TECHNOLOGY AND LEAD-TIME FOR CENTRAL VALLEY AGRICULTURAL WATER QUALITY PROBLEMS

	Control Technology[1]			
Problem	Basin facilities	Farm or local facilities	On-farm management	Lead-time[2] in years
1. Sediment	X	XXX	XXX	3-7
2. Nutrients	X	-	XXX	2-3[3]
3. Salinity	XXX	XX	X	10-30
4. Pesticides	-	-	XXX	2-3
5. Animal Waste	-	XXX	XX	2-3
6. Processing Waste	-	XXX	XX	2-3

---

[1] Rating of the applicability of control technology anticipated as most useful in controlling water quality problems is as follows: principle - XXX, significant - XX, possible - X.

[2] Predicted time based on pollution control and water resource development experience in the Central Valley of California.

[3] Based on on-farm management as the control technology. Basin facilities would need a lead-time similar to salinity control.

APPENDIX A

3. COLORADO

3.1 SUMMARY OF WATER QUALITY LAWS

3.1.1 Background

Early legislation in Colorado provided a basis for water quality lawsuits (Section 4214 Rev. St. 1908; Rev. St. 1868, p. 466, c. 62, §8). This 1908 legislative act prohibited any person from flooding the property of another by water, or washing down the tailings of his sluice upon the property of other persons and made it the duty of every miner to control his own tailings upon his own property or be liable for any damages which resulted.[1]

The Colorado State Department of Public Health was created in 1953. This Department is still in existence today and is primarily responsible for water pollution control (C.R.S. §66-1-2, 1953).[2] It is made up of the State Board of Health and the Division of Administration (C.R.S. §25-1-102).

The Colorado legislature also enacted a statute in 1953 which made it unlawful to pollute any public waters which contained fish (C.R.S. §62-5-13, 1953). This statute gave the Colorado Game, Fish and Parks Commission, or any citizen of the state, the right to seek redress for such pollution, including the acquisition of a temporary injunction (C.R.S. §66-5-15, 1953). This year also brought about the creation of the Colorado Water Conservation Board. This Board was given the duty of securing the greatest utilization of the waters in Colorado and of adding policy statements to the water policies of the state (C.R.S. §148-1-11, 1953).

This same Board adopted a policy statement in 1963 which stated that using good quality water for dilution of pollution was not a beneficial use (Minutes of the January 9, 1963 meeting of the Colorado Water Conservation Board, see Backus, 1964).

In 1953, the Colorado legislature also enacted two statutes which made it a criminal offense to pollute streams in the state. One of these statutes made it a crime to discharge "any obnoxious substance" into a stream of running water or any ditch or flume, and provided for a fine from $100 to not more than $500 (C.R.S. §40-12-22, 1953). The other statute prohibited the depositing of "oil, petroleum, or other oleaginous substance" into any of the waters of the state and made such an act punishable by a fine of not more than $1,000 or imprisonment for not more than six months or both (C.R.S. §40-12-23, 1953).

The Soil Conservation Act has an indirect role in preventing water pollution which is caused by the reduction of sediment in the waters of the state (C.R.S. §128-1-1 to 21, 1953 amended in 1960, §128-1-1 to 19, Perm. Supp. 1960). This Act established Soil Conservation Districts in order to achieve better erosion, flood control and water conservation practices (C.R.S. §128-1-8, 1953).

In 1966 the Water Pollution Control Act was adopted. This Act created the Water Pollution Control Commission and authorized it to develop rules and regulations for specific water pollution problems and programs. The Commission met for the first time in 1967 and during that year the Act was amended to permit adoption of effluent standards by the Commission.

During the 1973 general assembly, the Colorado Water Quality Control Act was enacted and this Act renamed the Water Pollution Control Commission the Water Quality Control Commission. This Act gave the Commission power to develop and maintain a comprehensive program for the prevention of water pollution (C.R.S. §25-8-202). It was Colorado's attempt to fully coordinate state water pollution with the federal activities under P.L. 92-500. On August 20, 1974, the Water Quality Control Commission approved regulations to enable Colorado to participate in the National Pollutant Discharge Elimination System.

3.1.2 Policy

The Colorado Water Quality Control Act sets forth the policy of the state:

> to conserve state waters and to protect, maintain and improve the quality thereof for public water supplies, for the protection and propagation of wildlife and aquatic life, and for domestic, agricultural, industrial, recreational and other beneficial uses; to provide that no pollutant be released into any state waters without first receiving treatment or other corrective action necessary to protect the legitimate and beneficial uses of such waters; to provide for the prevention, abatement and control of new or existing water pollution; and to cooperate with other states and the federal government in carrying out these objectives (C.R.S. §25-8-102(2)).

The Colorado State Legislature declared that:

> pollution of state waters constitutes a menace to public health and welfare, creates public nuisances, is harmful to wildlife and aquatic life, and impairs domestic, agricultural, industrial, recreational, and other beneficial uses of state waters and the problem of water pollution in this state is closely related to the problem of water pollution in adjoining states (C.R.S. §25-8-102(1)).

Pollution is defined by the Act as "the man-made, man-induced, or natural alteration of the physical, chemical, biological, and radiological integrity of water" (C.R.S. §25-8-103(12)). Pollutant is also defined by the Act as:

> dredged soil, dirt, slurry, solid waste, incinerator residue, sewage, sewage sludge, garbage, trash, chemical waste, biological nutrient, biological material, radioactive material, heat, wrecked or discharded equipment, rock, sand, or any industrial, municipal or agricultural waste (C.R.S. §25-8-103 (11)).

---

[1] Affirmed in Humphreys Tunnel and Mining Co. v. Frank, 105 P. 1093, Colo. 1909, and Wilmore v. Chain O'Mines, 96 Colo. 319, 44 P.2d 1024, 1934. See also Colo. Stat. Ann. ch. 110, §186, 1935, C.R.S. §92-24-3, 1953).

[2] Colorado statutory citations refer to the 1973 recodification unless otherwise indicated.

3.1.3 Classification

In carrying out its duties, the Water Quality Control Commission must classify state waters and develop and maintain a comprehensive and effective program for the prevention, control and abatement of water pollution and to protect the water quality throughout the entire state (C.R.S. §25-8-202).

The classifications are based upon the following characteristics:

1) the existing extent of pollution or the maximum extent of pollution to be tolerated as a goal;
2) whether or not pollution arises from natural sources;
3) present uses of the water, the uses for which the water is suitable in its present condition, or the uses for which it is to become suitable as a goal;
4) the character and uses of the land area bordering the water;
5) the need to protect the quality of the water for human purposes and also for the protection and propagation of wildlife and aquatic life; or
6) the type and character of the water, such as surface and sub-surface, lake, stream or ditch, volume, flow, depth, stream gradient, temperature, surface area involved, and daily or seasonal variability of any such characteristics (C.R.S. §25-8-203(2)).

There are two major classifications of water as A and B types; further subdivided by degree into A_1 and A_2 and B_1 and B_2. "A" water is that water which is suitable for purposes for which raw water is customarily used, including primary contact recreation, such as swimming and water skiing. Waters classified as "B" waters are those waters which are suitable for all purposes for which raw water is customarily used, except primary contact recreation, such as swimming and water skiing (Colorado Water Quality Standards, adopted January 15, 1974, effective June 19, 1974).[3]

3.1.4 Standards

Water quality standards are required by C.R.S. Section 25-8-204 and are promulgated by the Commission by regulations. Water quality standards are based upon the following characteristics:

1) toxic substances;
2) suspended solids, colloids and combinations of solids with other suspended substances;
3) bacteria, fecal coliform, fungi, viruses, and other biological constituents and characteristics;
4) dissolved oxygen and the extent of oxygen demanding substances;
5) phosphates, nitrates and other dissolved nutrients;
6) pH and hydrogen compounds;
7) chlorine, heavy metals and other chemical constituents;
8) salinity, acidity and alkalinity;
9) trash, refuse, oil and grease, and other foreign material;
10) taste, odor, color, and turbidity;
11) temperature.

The standards are established to maintain and enhance the quality of the state's waters for public water supplies, for the protection and propagation of wildlife and aquatic life, and for domestic, agricultural, industrial, recreational and other beneficial uses and to be consistent with the Federal Water Pollution Control Act of 1972. Further, "waters of the state, whose quality exceeds the limits set by these standards, shall be maintained at existing quality unless..it can be demonstrated...that a change in quality is justified ..." (Water Quality Standards for Colorado Environment Reporter, supra §726.1001).

The Commission must review stream standards at least once every three years and report its findings to the Commission. Water quality standards are applicable at all times with the exception of periods when a lake or reservoir water level, or stream flow, is less than the minimum seven day low flow or level which is expected to occur once in ten years. During such times, the basic water quality standards are applicable.

The Commission has also established standards for the discharge of wastes, but these standards do not include agricultural return flow discharges, except for the following statements on salinity:

> The Commission presently has not adopted a standard regarding salinity, but has reserved this section for such criteria. Since Colorado has been collecting and analyzing stream samples for a relatively short period of time, it is felt that insufficient data is available to set numerical standards at this time. In addition, technological know-how has not advanced to the point where all sources of salinity (irrigation return flows, for example) can be resolved. Therefore, Colorado proposes, where possible, to maintain salinity concentrations at or below present levels while gathering additional data so that meaningful numerical salinity standards can be established at some future date. In the meantime, Colorado will continue to take action against known discharges contributing to the salinity problem where present technology allows for such control; continue with demonstration projects, such as the Grand Valley Project; and, through whatever means available, strive to educate the irrigator in proper water management and irrigation practices.
>
> With regard to the Colorado River system and its tributaries, the State of Colorado will cooperate with other Colorado River Basin states and the Federal Government to support and implement the conclusions and recommendations adopted April 27, 1972, by the reconvened 7th Session of the Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and its tributaries.[4]

3.1.5 Permit System

A permit system was established in 1973 with the passage of the Water Quality Control Act (C.R.S.§§25-8-501 to 25-8-506). Basically, the permit system requires the acquisition of a permit before a pollutant can be discharged.

No person may discharge a pollutant from a point source without first having obtained a permit (C.R.S. §25-8-501). A point source is defined as, "any discernible, confined and discrete conveyance including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged" (C.R.S. §25-8-103).

---

[3] See Environment Reporter, State Water Laws, Vol. 1, 726:1001 to 1003.

[4] Colorado and the other six states in the Colorado River Basin have adopted salinity standards drafted by the Salinity Forum.

A discharge will not be permitted if it would violate state, regional, or local land use plans, unless all requirements of federal and state statutes and regulations have been met (Colorado Regulations For the State Discharge Permit System, adopted Nov. 19, 1974, effective January 31, 1975).[4] Further, no discharge will be permitted if it would violate a control regulation, unless the permit contains effluent limitations and a schedule of compliance which specifies treatment requirements (*Environment Reporter, State Water Laws*, Vol. 1, §726:0503(22).

These regulations further provide that:

> No discharge shall be permitted that by itself or in combination with other pollution will result in pollution (sic) the receiving waters in excess of the pollution permitted by an applicable water quality standard unless the permit contains effluent limitations and a schedule of compliance specifying treatment requirements which will bring the discharge into compliance with the water quality standards by a specified date (*Environment Reporter, State Water Laws*, Vol. 1, §726:0503(3)).
>
> No discharge shall be permitted from a point source which is in conflict with an established water quality management plan, promulgated under Sections 201, 208, and 303 of the federal act (*Environment Reporter, State Water Laws*, Vol. 1, §726:0503(6)).

Specifically, a permit is not required for any flow or return flow of irrigation water unless a federal act or regulation so requires (C.R.S. §25-8-506). The Colorado General Assembly took particular issue with this topic by defining irrigation return flow and separating water delivery from return flow as follows:

> 'Irrigation return flow' means tailwater, tile drainage, or surfaced groundwater flow from irrigated land, in a system operated by public or private organizations or individuals, if:
>
> (A) There is a point source of discharge (e.g., a pipe, a ditch, or any other defined or discrete conveyance), whether an artificial or a natural feature of the land, purposely maintained as a drainage structure;
>
> (B) The return flow is from land areas of more than three thousand contiguous irrigated acres or three thousand noncontiguous irrigated acres which use the same artificial drainage system or natural feature of the land purposely maintained as a common drainage structure;
>
> (C) The discharge from the lands (as opposed to the water supply to the lands) is controlled by one public or private organization or one individual. Irrigation return flow is concerned with the drainage from irrigated lands. *It does not include the delivery of irrigation water* (C.R.S. §25-8-502, emphasis added; see *Environment Reporter, State Water Laws*, Vol. 1, §726:0108).

The Water Quality Control Division and the Water Quality Control Commission administer the permit system. The Commission promulgates such regulations as may be necessary for the orderly administration of permits for the discharge of pollutants (C.R.S. §25-8-501(3)). The Division must examine applications and is given the power to issue, suspend, revoke, modify, or deny permits (C.R.S. §25-8-501(2)).

The Division regulates the issuance and suspension of permits and also has the power to modify, suspend, revoke or otherwise administer permits for the discharge of pollutants (C.R.S. §25-8-501(2)). The duration of a permit cannot exceed five years, and if a permittee desires to continue his discharge beyond the period of his permit, he must apply for reissuance at least 180 days before his expiration date (*Environment Reporter, State Water Laws*, Vol. 1, §726:0505).

The permit must include the address and identification of the permittee; the location, quantity and quality characteristics of the permitted discharge; effluent limitations and requirements for treatment prior to discharge; guidelines for equipment and procedures required for mandatory monitoring, as well as record keeping and reporting requirements; a schedule of compliance with applicable effluent limitations; and a requirement that the permittee allow authorized representatives to enter upon his premises at reasonable times in order to inspect any monitoring equipment (*Environment Reporter, State Water Laws*, Vol. 1, §§726:0503-0504, C.R.S. §25-8-501).

Temporary permits may be issued by the Division upon the authorization of the Commission (C.R.S. §25-8-501(4)). No temporary permit will be issued for more than two years and a temporary permit cannot be renewed.

When the Division receives an application, it prepares a tentative determination to issue or deny the permit, and if issued, the terms and conditions of such a permit (C.R.S. § 25-8-502). An annual fee must also be paid for all permits issued.

Public notice is given of every complete application for a discharge permit in order to inform interested persons of the proposed discharge (C.R.S. § 25-8-502). Notice must be circulated within the geographical areas of the proposed discharge.

Colorado was approved by the Environmental Protection Agency to administer the NPDES program effective March 27, 1975.

3.1.6 Sanctions and Enforcement Measures

The Water Quality Control Division is charged with the enforcement of the water quality control programs adopted by the Commission (C.R.S. §25-8-103(3) and §25-8-301). Specific duties of the Division include the carrying out of enforcement provisions and the seeking of criminal prosecutions for violations

---

[4] See *Environment Reporter, State Water Laws*, Vol. 1, §§726:0501 to 0508; see also C.R.S. §25-8-503.

(C.R.S. §25-8-302(1)(a)). Furthermore, the Division must seek other appropriate judicial relief.

The purpose of these sanctions is to provide additional and cumulative remedies to prevent, control and abate water pollution and protect water quality (C.R.S. §25-8-612).

Any person or agency may initiate an investigation by the Division of any suspected violation of an order, permit, or regulation (C.R.S. §25-8-601(1)). In the event of a spill or discharge of oil, or other substance, which may cause the pollution of the waters of the state, the person engaged in that operation or activity must notify the Division of that discharge (C.R.S. §25-8-601(2)). Failure to do so could result in the assessment of a fine of not more than $10,000, imprisonment for not more than one year, or both. The Division may serve written notice which sets forth the provision violated and the nature of any proposed corrective action, if it has reason to believe that a violation has occurred (C.R.S. §25-8-602(1)). The Division may also require the attendance of the alleged violator before a public hearing to answer the alleged violation (C.R.S. §25-8-603(1)). If a determination is made at the hearing that a violation of a permit provision has occurred, then the Division can suspend, modify or revoke the permit (C.R.S. §25-8-604). The Division may issue a cease and desist order with or without a hearing (C.R.S. §25-8-605). Clean-up orders may be issued by the Division to order the clean-up of any material which was accidentally or purposely dumped, spilled or deposited in state waters (C.R.S. §25-8-606). Failure to comply with a cease and desist order, or a clean-up order, could result in the issuance from the proper court of a temporary restraining order, or a preliminary or permanent injunction, to prevent the continuation of the violation (C.R.S. §25-8-607(1) and (2)).

Any person who violates any provision of a permit, a cease and desist order, or a clean-up order is subject to a fine of not more than $10,000 per day for each day that the violation occurs (C.R.S. §25-8-608 (1)). Furthermore, any person who discharges a pollutant into state waters commits a criminal pollution if the discharge was made:

1) in violation of any issued permit;
2) in violation of any cease and desist order or order issued by the division which is final and not stayed by court order;
3) without a permit, if a permit is required unless there is a pending application for a permit; or
4) in violation of any control regulation; unless a permit has been issued or there is a pending application for such a permit (C.R.S. §25-8-609).

Any person who commits criminal pollution may be fined up to $12,500 per day "if the violation was committed with criminal negligence," or in a reckless manner (C.R.S. §25-8-609(3)(a)). If the violation was committed knowingly, or intentionally, the maximum fine is $25,000 (C.R.S. §25-8-609(3)(b)). If a second offense occurs, the fine is double the amounts specified above (C.R.S. §25-8-609(3)(c)).

3.2 ADMINISTRATION OF WATER QUALITY LAWS

Administration of Colorado's water quality laws is assigned to the Division of Administration of the State Department of Health. The Division of Administration also administers and enforces any water quality control programs adopted by the Water Quality Control Commission (C.R.S. §25-8-301).

3.2.1 Water Quality Control Division

The Executive Director of the Department of Health is directed to maintain a separate water quality control agency within the Division of Administration (C.R.S. §25-8-301(1)(b)). This agency is the Water Quality Control Division. The Director of the Water Quality Control Division must be a registered professional engineer or have a graduate degree in engineering or other specialty dealing with the problems of pollution and must also have the appropriate practical and administrative experience relating to pollution problems (C.R.S. §25-8-301(1)(c)). See Figure 1 for a description of the Division of Water Quality Control.

The Water Quality Control Division must carry out any enforcement provision which includes the seeking of criminal prosecution for violation (C.R.S. §25-8-302(a)). The Division also administers the waste discharge system, monitors waste discharges, submits an annual report to the Commission, and performs any other assigned duties (C.R.S. §25-8-302).

In monitoring waste discharges, the Division takes water samples in order to determine the quality of every reasonably accessible segment of state waters (C.R.S. §25-8-303). If there is suspected pollution, the sampling cannot be limited, or restricted, even though no water quality standard exists for the suspected type of pollution. After sampling, the Division is to determine the nature and amount of each pollutant, whether a new or different water quality standard is needed, the source of the pollutant, and the identity of persons responsible for the pollution (C.R.S. §25-8-303(2)).

If a separate pollution source is identified, the Division determines what control regulation applies, whether the discharge is covered by a permit and whether or not any condition of the permit is being violated, and makes a determination of what further control measures are needed (C.R.S. §25-8-303(3)(a)(b)(c)). The Division can also require a permit holder to:

1) establish and maintain records;
2) make reports;
3) install, calibrate, use, and maintain monitoring methods and equipment, including biological monitoring methods;
4) sample discharges; and
5) provide additional reasonably available information relating to discharges into public sewage treatment works (C.R.S. §25-8-304).

The Division has power to enter and inspect premises and records in order to adequately investigate any alleged pollution (C.R.S. §25-8-306(1)).

If pollution presents an immediate danger to the health or livelihood of members of the public, the Division may issue a written order to the violator to cease or prevent the pollution, or the Division may seek a restraining order or an injunction (C.R.S. §25-8-307).

Section 25-8-305 provides that the Division must report to the Commission by October 1 of each year on the effectiveness of water quality legislation and make any recommendations it deems advisable.

The Division also has the power to:

1) conduct studies, research and demonstrations with respect to water pollution and the control, abatement, or prevention thereof, as requested by the Commission.

2) furnish technical advice and services relating to water pollution problems and control techniques;
3) designate one or more persons or agencies in any area of the state as a water quality control authority, as agent of the Division to exercise and perform such powers and duties of the Division as may be specified in such designation;
4) to administer loans and grants from the federal government and from other sources;
5) to advise, consult, cooperate, and enter into agreements with other agencies of the state, the federal government, other states, and inter-state agencies, and with groups, political subdivisions and industries affected by the provisions of this article and the policies of the Commission; but any such agreement involving, authorizing, or requiring compliance in this state with any standard or regulation shall not be effective unless or until the Commission has held a hearing with respect to such standard or regulation and has adopted the same in compliance with this article;
6) to certify, when requested, the existence of any facility, land, building, machinery, equipment, treatment works, sewage or disposal systems, as have been acquired, constructed, or installed in conformity with the purposes of this article; and
7) to take such action in accordance with rules and orders promulgated by the Commission as may be necessary to prevent, abate, and control pollution (C.R.S. §25-8-308).

The Division's field services are conducted by district engineers and technicians assigned to the districts. The District Engineer must have a thorough knowledge of water quality in his district, including all possible sources of pollution. He must be acquainted with the various wastewater treatment systems and coordinate his efforts with those of the local health department.

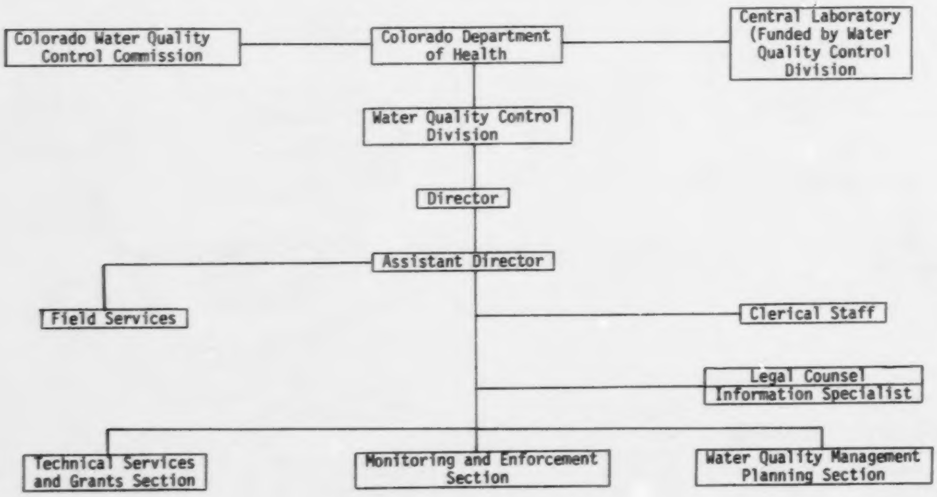
3.2.2 Water Quality Control Commission

The Water Quality Control Commission is a branch of the Department of Health and consists of eleven members (C.R.S. §25-8-201(1)). The Commission must contain: 1) a member of the State Board of Health or a member of its administrative staff; 2) a member of the Wildlife Commission or a member of its administrative staff; 3) a member of the Water Conservation Board or a member of its administrative staff; 4) the Executive Director of the Department of Natural Resources or his designee; and 5) seven citizens of the state who are appointed by the Governor, one member from each congressional district and the remainder from the state at large. The terms of these appointed members are for three years, initially three serving for one year, two for two years, and two serving for three years.

The Governor has the power to remove appointed members for malfeasance in office, failure to regularly attend meetings, or for any cause that renders a member incapable or unfit to discharge the duties of his office (C.R.S. §25-8-201(2)).

The Commission must develop and maintain a comprehensive and effective program for the prevention, control and abatement of water pollution and for the protection of water quality throughout the state (C.R.S. §25-8-202). The Commission is also charged with classifying the waters of the state (see Section 3.1.3); promulgating water quality standards (see Section 3.1.4), control regulations (supra), and waste discharge permit regulations (see Section 3.1.5); perform duties with respect to the location, design, construction, financing, and operation of sewage treatment plants and individual sewage disposal systems; reviewing applications for underground detonations and

Figure 1. Organization of Colorado Water Quality Agencies.


Colorado Water Quality Control Commission
Colorado Department of Health
Central Laboratory (Funded by Water Quality Control Division
Water Quality Control Division
Director
Assistant Director
Field Services
Clerical Staff
Legal Counsel
Information Specialist
Technical Services and Grants Section
Monitoring and Enforcement Section
Water Quality Management Planning Section

discharges; and the classification of waters, water quality standards and control regulations (C.R.S. §25-8-202).

The Commission and the State Board of Health hold an annual public hearing in order to hear public comment on water pollution problems, alleged sources of water pollution, and the availability of practical remedies (C.R.S. §25-8-202(4)). The Commission also submits an annual report to the Governor on the effectiveness of water quality legislation and any recommendations (C.R.S. §25-8-202(5)).

3.2.3 Additional Agency Involvement

Office of State Engineer--
In addition to the above two governmental bodies, responsibility for water administration and control is divided between: (1) the State Engineer, who is the executive director of the Division of Water Resources which is composed of seven Division Engineers and Water Commissioners, a Ground Water Commission, an Irrigation District Commission, and a Board of Examiners of Water Well and Pump Installation Contractors; (2) the Colorado Water Conservation Board; and 3) the judiciary composed of one district court judge who is designated as a water judge for each of the seven water divisions (see Figure 2).

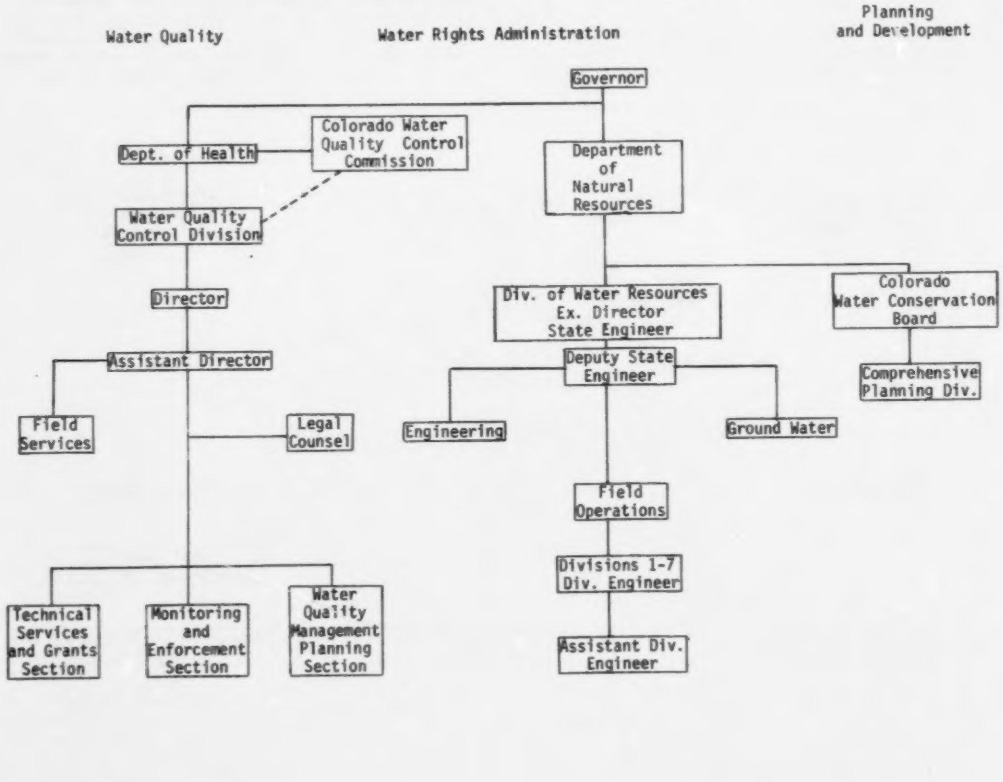
The Division of Water Resources, headed by the State Engineer, is made up of: Water Operations, Engineering and Hearing or Legal. The Water Operations Section administers the use and distribution of the state's surface and ground water. The Engineering Section gives technical support for administration in the fields of records and files, hydrography, hydrology and dams and reservoirs. The Hearing and Legal Section is responsible for advising and coordinating legal matters in water law conflicts (see Figure 3).

The principal responsibility of the State Engineer in Colorado "is to administer the laws...pertaining to water rights and, at the request of the Governor, to render service and give counsel to other agencies of the state" (C.R.S. §37-80-103).

The State Engineer reports to the Executive Director of the Department of Natural Resources and the duties of the office are spelled out in the statutes as follows:

> (1) The State Engineer shall be the executive officer in charge of supervising the work of all division engineers.... He has executive responsibility and authority with respect to:
>
> (a) Discharge of the obligations of the state of Colorado imposed by compact or judicial order on the office of the State Engineer;
>
> (b) Securing and implementing legal opinions and assistance regarding the work within his jurisdiction;
>
> (c) Coordinating the work of the division of water resources with other departments of the state government...;
>
> (d) The supervision of employees in the office of the Division of Water Resources ...;
>
> (e) Construction contracts, professional and technical consultants and other

Figure 2. Colorado Water Agencies and Their Functions


Water Quality
Water Rights Administration
Planning and Development
Governor
Dept. of Health
Colorado Water Quality Control Commission
Department of Natural Resources
Water Quality Control Division
Director
Assistant Director
Field Services
Legal Counsel
Technical Services and Grants Section
Monitoring and Enforcement Section
Water Quality Management Planning Section
Div. of Water Resources Ex. Director State Engineer
Colorado Water Conservation Board
Deputy State Engineer
Engineering
Ground Water
Comprehensive Planning Div.
Field Operations
Divisions 1-7 Div. Engineer
Assistant Div. Engineer

> contracts related to the operation of the Division of Water Resources;
>
> (f) The keeping and preparation of records and investigations as related to carrying out the functions of the Division of Water Resources, including water well licensing;
>
> (g) Rule making for the Division of Water Resources;
>
> (h) General supervisory control over measurement, record keeping, and distribution of the public waters of the state;
>
> (i) Collection and distribution of data on snowfall and prediction of probable run-off therefrom;
>
> (2) The State Engineer shall have authority to delegate any other person the obligation to discharge one or more portions of the duties imposed upon him....
>
> (6)(a) The State Engineer and those under his supervision shall be subject to the direction of the executive director of the Department of Natural Resources with respect to those matters concerning the Division of Water Resources which require coordination with other branches of the Department of Natural Resources.
>
> (7) Under the control and direction of the State Engineer, and in cooperation with the Colorado Water Conservation Board, there shall be a water supply section, which shall have the duty to collect and study data and distribute such information on the water supplies, both surface and ground water, of the state of Colorado in order to make a more efficient administration of the uses thereof (C.R.S. §37-80-102(1-8)).

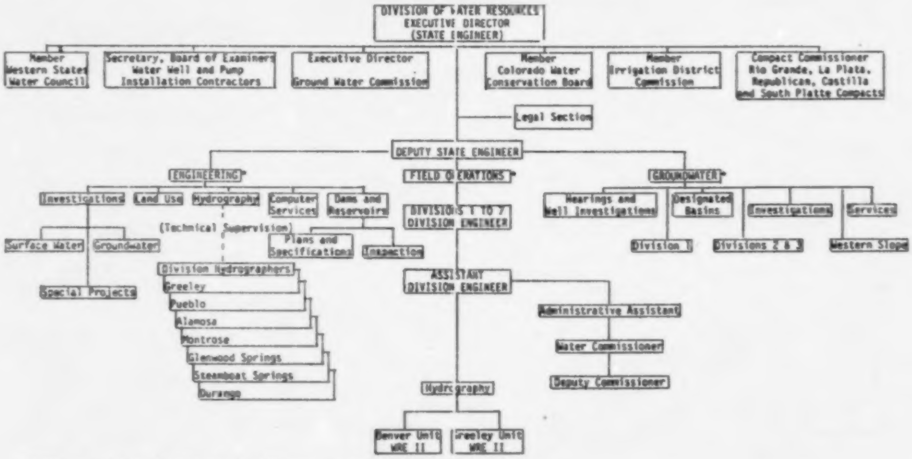
To assist the Office of the State Engineer in administering the state's waters, seven water divisions were created for the 9 drainage basins in the state in 1969, thereby eliminating the previous 70 districts. Water distribution and administration of laws at division and local levels are carried out by a division engineer and his staff. The former is appointed by the State Engineer (C.R.S. §37-92-201 and 202) (See Figure 4).

Enforcement of Beneficial Use of Waste Concept--The Water Right Determination and Administration Act of 1969 states that it is the policy of the state of Colorado to integrate the appropriation, use the administration of underground water tributary to a stream with the use of surface water, in such a way to maximize the beneficial use of all of the waters of this state (C.R.S. §37-52-102). Further, an appropriator is limited to a quantity of water which he has used for a beneficial purpose and an appropriative right cannot be enlarged beyond that needed and used for the original undertaking from which the priority was awarded (Ft. Lyons Canal Co. v. Chew, 33 Colo. 392, 81 P.37, 1905).

But in exercising his water right, a senior appropriator is not unconditionally entitled to command the river flow to receive his allocation if his call on the river would be "futile." The 1969 Colorado Water Act states this rule:

> No reduction of any lawful diversion because of the operation of the priority system shall be permitted unless such reduction would increase the amount of water available to and required by water rights having senior priorities (C.R.S. §37-92-102).

Figure 3. Organizational Chart--Colorado Division of Water Resources



SOURCE: *State Engineer's Office Pamphlet* (Denver: State Engineer's Office).

*There are three Deputy State Engineers, one for Engineering, Field Operations, and Groundwater.

The statutes go on to provide authority, direction and criteria for curtailment of diversions by the State Engineer, his division engineers and their staff.

Colorado Water Conservation Board--

The Colorado Water Conservation Board was established to aid in the protection and development of the waters of the state for the benefit of the present and future inhabitants of the state (C.R.S. §37-60-102). The Board consists of 13 members. The Natural Resources Coordinator, Attorney General, State Engineer and Director of said Board are ex-Officio members (C.R.S. §37-60-104). The remaining members are appointed by the Governor for terms of three years (See Figure 5).

According to the statutes:

> It shall be the duty of the Board to promote the conservation of the waters of the state of Colorado in order to secure the greatest utilization of such waters and the utmost prevention of floods (C.R.S. §37-60-106(1-16)).

The Colorado Conservation Board has been directed to make, or cause to be made, a continuous study of the water resources of the state of Colorado. It shall also carry on a continuous study of the present and potential uses thereof to the full extent necessary to a unified and harmonious development of all waters for beneficial use in Colorado to the fullest extent possible under the law, including the law created by compacts affecting the use of said water (C.R.S. §37-60-115).

The state of Colorado has assented to the provisions of the "Water Resources Planning Act," approved by the U.S. Congress on July 22, 1965 (C.R.S. §37-60-118(1)). In this regard, the Colorado Water Board was directed to conduct and establish a comprehensive water planning program, as defined in Title III of the above act, in conformity with such rules and regulations as may be promulgated by the Water Resources Council pursuant to said act.[5]

The Colorado Water Board is authorized to make available for use to, or enter into contracts with, private organizations or state agencies any water or power conserved on state owned or controlled water projects (C.R.S. §37-60-119). The Board is further empowered to enter into contracts which are "necessary for the maintenance and continued operation of such projects" (C.R.S. §37-60-120).

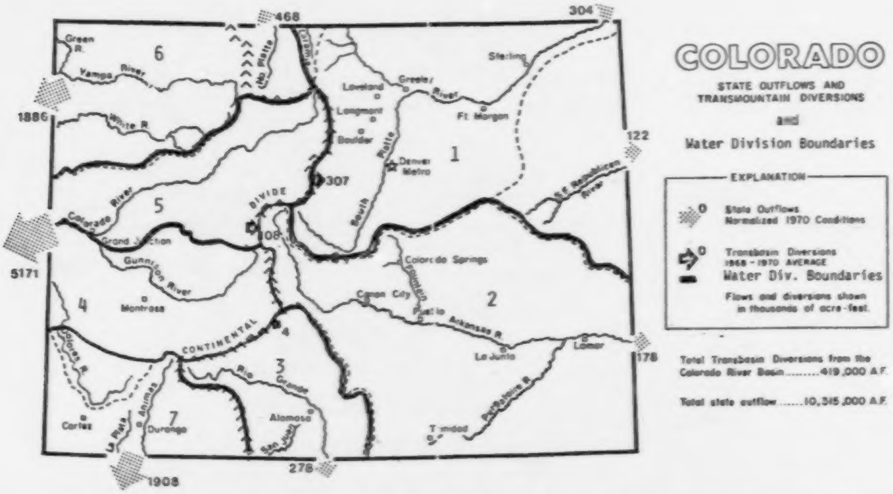
Water Courts--

As noted above, the Water Right Determination and Administration Act of 1969 (C.R.S. §37-92-101, et. seq.) established seven water divisions in Colorado (C.R.S. §37-92-201). The State Engineer appoints one Division Engineer for each district (C.R.S. §37-92-101). The Supreme Court of Colorado was required to designate a Water Judge for each division to hear all water matters in the division (C.R.S. §37-92-203(2)). The 1969 Water Right Determination and Administration Act gave jurisdiction of all water matters to the water judges. No judge except a water judge can act on matters relating to water. Water matters include

---

[5] Colorado Water Conservation Board and the Bureau of Reclamation, Colo. State Water Plan, Phase I--Appraisals of Present Conditions; Phase II--Legal and Institutional Considerations, and Phase III--Plans for Development, Denver, 1974.

Figure 4. Colorado Basin Outflows and Water Divisions



SOURCE: *Colorado Water*, League of Women Voters of Colorado, 1975. Water Division Boundaries have been added.

orders and the validity of State Engineers' rules and regulations (Baumgartner v. Stremel, 496 F. 2d 705 Colo., 1972; Kuiper v. Owners Conservation Ass'n., 490 P.2d 268, Colo., 1971).

Other matters such as the way in which irrigation water is allowed to run off the land or a suit to enjoin the use of water in a designated ground water basin are administered by the Colorado Ground Water Commission and suit may be brought in the district court which has jurisdiction (Larrick v. District Court, 493 P.2d 647, Colo., 1972).

3.3 SPECIAL LEGISLATION

The Individual Sewage Disposal Systems Act was enacted to preserve the environment, protect public health, eliminate and control causes of diseases, infection and aerosol contamination, and to reduce and control the pollution of the air, land and water (C.R.S. §25-10-102). The Act also establishes minimum standards, rules and regulations for individual sewage disposal systems, and provides for the administration and enforcement of these standards, rules and regulations.

An application for a permit for an individual sewage disposal system must be accompanied by a fee up to $75.00 (C.R.S. §25-10-106(a)). The local health department reviews the application and inspects the proposed site (C.R.S. §25-10-106(b)). Final inspection of the system is made by the local health department after the construction, installation, alteration or repair work under the permit has reached completion, but before the system is placed in use (C.R.S. §25-10-106 (h)). Periodic inspections of the system under operation are also required (C.R.S. §25-10-106(i)).

The local health department may issue a repair permit and emergency use permits if the system is improperly functioning (C.R.S. §25-10-106(j)). Furthermore, the department may issue a cease and desist order if the system is found to be functioning improperly, or constitutes a nuisance or hazard to the public health (C.R.S. §25-10-106(k)).

The Recreation Land Preservation Act of 1971 was enacted to establish minimum controls to prohibit the pollution of the air, water and land; to prevent the degradation of the natural environment of recreational and mountain areas in order to preserve the ecology and environment in its natural condition; to facilitate the enjoyment of the state and its ecology, nature and scenery by the inhabitants and visitors of the state; and to protect their health, safety and welfare (C.R.S. §25-13-102).

The Department of Health administers this Act, while the state Board of Health has promulgated rules and regulations to carry out the purposes of the Act (C.R.S. §25-13-104).

The Act makes it unlawful to discharge untreated sewage upon the surface of the ground within a recreation area of the state, or in any waters of the state (C.R.S. §25-13-105(1)(a)). Furthermore, the Act makes it unlawful to deposit or bury refuse on public lands or waters, willfully cut down, uproot, break, or otherwise destroy any living trees, shrubs, wild flowers, or natural flora in recreation areas of the state, and to use any cleansing agents in waters of the state for any purpose in an organized campground or recreational area, unless the water is deposited in the proper facilities (C.R.S. §25-13-105).

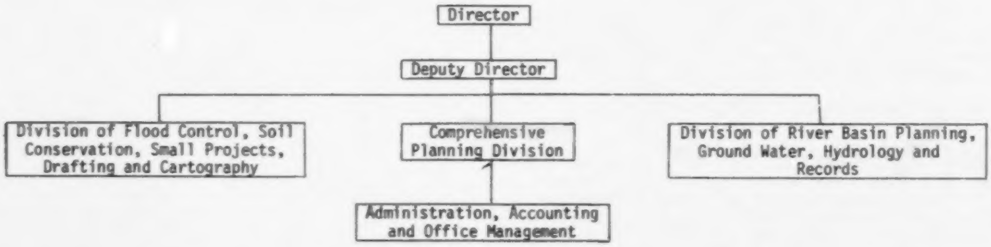
3.4 RELATED LEGISLATION

Due to the rapid growth and development of the state of Colorado and the resulting demands upon its land resources, new measures were necessary to promote the orderly use of land development; provide for the needs of agriculture, forestry, industry, business, residential communities, and recreation; encourage uses of land which were in accordance with the conservation of the soil, water and forest resources; and promote a more efficient and economical use of public resources (C.R.S. §24-65-102(1)). The result was the Colorado Land Use Act (C.R.S. §24-65-101, et. seq.).

The Act established the Colorado Land Use Commission, which consists of nine members (C.R.S. §24-65-103). The Commission must develop a total land use planning program which includes an environmental and management matrix, a growth monitoring system and an impact model (C.R.S. §24-65-104).

If the Commission determines that there is a land development activity which constitutes a danger of irreparable injury, loss, or damage of serious proportions to the public health, welfare, or safety, it must notify the Board of County Commissioners (C.R.S. §24-65-104(2)). If the Board of County Commissioners

Figure 5. Colorado Water Conservation Board Organization Chart


Director
Deputy Director
Division of Flood Control, Soil Conservation, Small Projects, Drafting and Cartography
Comprehensive Planning Division
Division of River Basin Planning, Ground Water, Hydrology and Records
Administration, Accounting and Office Management

SOURCE: Colorado Water Conservation Board, Proposed Budget, FY 1971-1972, p. A-2.

fails to act, the Commission may request the Governor to review such facts and dangers and may direct the Commission to issue a cease and desist order.

The Colorado Land Use Act does not modify or amend existing laws or court decrees with respect to the determination and administration of water rights (C.R.S. §24-65.1-106).

The Colorado Soil Conservation Board must send recommendations to local governments and the Colorado Land Use Commission relating to "resources data inventories, soils, soil suitability, erosion and sedimentation, floodwater problems and watershed protection" (C.R.S. §24-65.1-302).

An advisory committee was established by this Act and consisted of among others a representative of conservation, agriculture and water interests (C.R.S. §24-65-104(c)). This committee was defunct as of January 10, 1974.

3.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

Colorado has adopted regulations for the state discharge permit system (Environment Reporter, State Water Laws, Vol. 1, 726:0501-0508, adopted November 19, 1974, effective January 31, 1975). Generally, these regulations are not applicable to the discharge of pollutants from agriculture, including irrigation return flows, except as may be necessitated by federal act or regulation (C.R.S. §25-8-506).

A discharge permit may be required for irrigation return flows if:

(a) there is a point source of discharge (e.g., a pipe, a ditch, or other defined or discrete conveyance) whether artificial or a natural feature of the land purposely maintained as a drainage structure, and;

(b) the return flow is from land areas of more than 3,000 contiguous irrigated acres, of 3,000 non-contiguous irrigated acres which use the same artificial drainage system or natural feature of the land purposely maintained as a common drainage structure, and;

(c) the discharge from the lands (as opposed to the water supply to the lands) is controlled by one public or private organization or one individual. Irrigation return flow is concerned with the drainage from irrigated land. It does not include the delivery of irrigation water (Environment Reporter, State Water Laws, Vol. 1, §726:0501.200(10)).

"Point source" as defined earlier is any discernible, confined and discrete conveyance. This definition includes any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged (C.R.S. §25-8-103(10)).

3.6 CASE LAW APPLICABLE TO AGRICULTURE

The Pilot Rock Creek Canal Co. v. Chapman (Sup. Ct., October, 1858, p. 161-163) involved an action for damages to a ditch. The damages arose from the Defendant's mining operation which had caused sediment and earth to settle into Plaintiff's ditch. The court held that the Defendants were liable for the damages to the Plaintiff's ditch. In 1897, the Colorado Court of Appeals held that an appropriator takes title to the water subject to the limitation that his use will not injure or pollute the waters of a stream to the detriment of other users, subsequent in right. Thus, the concept of reasonable use was adopted to deny the right of a senior to pollute the waters to the detriment of downstream juniors (Suffolk Gold Mining Co. v. San Miguel Consolidated Mining and Milling Co., 9 Colo. A. 407, 48 P.828, 1897).

Twelve years later, the Supreme Court of Colorado held in Humphreys Tunnel and Mining Co. v. Frank (105 P. 1093, Colo., 1909) that an appropriator is entitled to his appropriation undiminished in quantity as well as quality (see also Wilmore v. Chain O'Mines, 96 Colo. 319, 44 P.2d 1024, 1934).

In Slide Mines, Inc. v. Left Hand Ditch Co. (77 P.2d 125, 102 Colo. 69, 1938), the Supreme Court of Colorado upheld an injunction which enjoined the Defendant from depositing of mine tailings which had injured the Plaintiff's crops and ditches. The Supreme Court held that an injunction against water pollution will not be denied on the basis of the unclean hands doctrine.

Finally, in The Game and Fish Commission v. The Farmers Irrigation Co. (126 P.2d 562, 1967), the Supreme Court of Colorado upheld the granting of an injunction and the award of out-of-pocket expenses where the Defendant polluted stream waters. This case establishes the right to quality as well as quantity to be delivered to an appropriator, but does not establish the element of quality as part of the right.

3.7 INFORMATION SOURCES

Backus, Robert A., "Water Pollution Control in Colorado," 36 Colorado Law Review 413, 1964.

Radosevich, Nobe, Allardice and Kirkwood, Evolution and Administration of Colorado Water Law, 1897-1976, Water Resources Publications, Ft. Collins, Colo., U.S.A., 1976.

Radosevich, George E., Allen, Peggy, Colorado Water Quality Control and Administration Laws and Regulations, Center for Economic Education, Department of Economics, Colorado State University, Ft. Collins, Colorado. 1975.

______, The Grand Valley: Control of Salinity in Irrigation Return Flows, Dept. of Interior, Bureau of Reclamation; Dept. of Agriculture, Agricultural Research Service; and Colo. State U. Experiment Station.

Radosevich, G. E., D. Hamburg, E. L. Swick, Colorado Water Laws: A Compilation of Statutes, Regulations, Compacts, and Selected Cases, Info. Series No. 17, Center for Economic Education, Department of Economics, Colorado State University, 1975.

APPENDIX A

4. IDAHO

4.1 SUMMARY OF WATER QUALITY LAWS

4.1.1 Background

Idaho's first effort at the public control of water quality came in 1909 when the legislature created the State Board of Health which was to have "general supervision of all matters relating to the preservation of the life and health of the people of the state" (Idaho Session Laws 184, § 6, 1907). Actual enforcement of the legislation was delegated to county boards of health (Ibid., § 21, at 188). Unfortunately, the local boards did not exercise this power and water pollution was not reduced (Wood, 1971). In 1941 the duties of the Board of Health were transferred to the Department of Public Health only to be reshuffled back to the Board of Health in 1955 (Ibid., at 102). During this period of transition there is not a single reported case of the Board taking judicial action to enforce water quality regulations (Ibid., at 103).

In 1967 the Idaho Legislature repealed the 1955 act and created new provisions designating the State Board of Health as Idaho's water quality control agency (I.C. § 39-112 G). This legislation subsequently gave way to the more comprehensive provisions of the Environmental Protection and Health Act of 1972 (I.C. §§ 39-101 to 39-136, 1972). Later amendments to the act transferred the former duties of the Department of Health, Department of Public Health, and the Air Pollution Control Commission to the director of the Department of Health and Welfare (I.C. § 39-105). The duties of the Board of Environmental and Community Services have likewise been transferred to the Board of Health and Welfare, which is the policy making body for the department (I.C. § 39-107).

4.1.2 Policy

The policy which is announced in the Environmental Protection and Health Act is as follows:

> It is therefore declared to be the policy of the state to provide for the protection of the environment and the promotion of personal health and to thereby protect and promote the health, safety and general welfare of the people of this state (I.C. § 39-102).

The specific policy of the Board of Health and Welfare towards water quality is "to provide for an orderly and economically feasible comprehensive water pollution control program, which program shall be administered to conserve the waters of the State for all legitimate beneficial uses, including uses for domestic purposes, agriculture, industry, recreation and fish and wildlife propagation"(Water Quality Standards and Wastewater Treatment Requirements, Idaho Dept. of Health and Welfare, June, 1973).

Although the Environmental Protection and Health Act does not expressly declare water pollution to be a public nuisance, the act does make violators liable for any penalties, beyond those of the act, which can be incurred due to state enforcement in termination of a nuisance (I.C. § 39-109 (7)). Idaho Code defines a nuisance as:

> anything which is injurious to health . . . , or offensive to the senses, or an obstruction to the free use of property so as to interfere with the comfortable enjoyment of life or property, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, stream, canal, or basin (I.C. § 52-101, 1957).

If the nuisance is of a public rather than private nature, an action may be maintained only by a "public body or officer authorized thereto by law" (I.C. § 52-205, 1957).

4.1.3 Classification

The Board of Health and Welfare has adopted water use classifications for the following types of use:

(1) Domestic and industrial water supply,
(2) Irrigation and stock watering,
(3) Recreation and/or esthetic qualities (Water Quality Standards and Wastewater Treatment Requirements, Idaho Dept. of Health and Welfare § VI, June 1973).

The classification for Recreation contains subclasses A through E depending on the type of body contact which is permitted (Ibid.). Other protected uses have been established for specific watercourses and are indexed in an appendix to the Water Quality Standards and Wastewater Treatment Requirements of the Department of Health and Welfare.

4.1.4 Standards

The director of the Department of Health and Welfare is given the authority to formulate and recommend for adoption by the board "rules, regulations, codes and standards" for the control of environmental pollution (I.C. § 39-105). Pursuant to this authority specific standards have been adopted which concern the following parameters of water quality:

A. Coliform Concentration
B. Dissolved Oxygen
C. Hydrogen Ion Concentration
D. Temperature
E. Turbidity
F. Total Dissolved Solids

(Water Quality Standards and Wastewater Treatment Requirements, Idaho Dept. of Health and Welfare § VIII, June, 1973).

The department also has general water quality standards which cover state waters according to the following factors:

A. Toxic chemicals which adversely affect the use for which the waters have been classified;
B. Deleterious substances adversely affecting edible species of fish and drinking water supplies;
C. Radioactive materials;
D. Floating or submerged matter not attributable to natural causes;
E. Excess nutrients which cause nuisance aquatic growths;
F. Visible concentrations of oil and foam which adversely affect the classified use; and
G. Objectionable turbidity traceable to man-made sources (Ibid., § VII).

The key to the operation of the above standards is the interrelationship between those standards and the water use classification for the particular watercourse in question.

4.1.5 Permit System

The Director of the Department of Health and Welfare is given the authority to issue permits and licenses in accordance with the rules and regulations of the Board (I.C. § 39-105). Pollution source permits are provided for and their issuance is by the Director according to the above procedure (I.C. § 39-115). The issuance of pollution point-source permits has been authorized since 1969 (Ibid.). The Director can bring legal action to enjoin threatened or continued violation of pollution permits without first taking action to revoke the permit (Ibid.). The application of the permit system to agriculture is covered in section 4.5 below.

Idaho Water Quality Standards provide that the Department of Public Health will "develop and implement an enforcement program through the continuing planning process required under the Federal Water Pollution Control Act of 1972" (Water Quality Standards and Wastewater Treatment Requirements, § XII, June, 1973). This particular section goes on to state that "The Department's planned program for water pollution control will be defined and revised annually in accordance with applicable U.S. EPA regulations" (Ibid.).

4.1.6 Sanctions and Enforcement Measures

The director of the Department of Health and Welfare is given the responsibility for " . . . the enforcement of standards relating to the discharge of effluent into the waters of this state . . . " (I.C. § 39-105). The director is also given authority for the general enforcement of "all laws, rules, regulations, codes and standards relating to environmental protection and health" (Ibid.). He has the same power in the specific area of public water supplies (Ibid.).

In addition to the enforcement powers of the director, the county prosecuting attorney or the state attorney general can bring a civil action to enjoin those activities which are violations of the provisions of the act, or regulations adopted under the act (I.C. § 39-108).

Civil penalties for violations of the act or departmental rules can be up to one thousand dollars for each day the violation continues (Ibid.). However, the penalty only begins to run with the tenth day after the expiration of the time fixed by the board's order for taking corrective or preventive action (Ibid.). Willful or negligent violations are treated as misdemeanors and convicted violators can face a fine of not more than three hundred dollars for each day the violation continues (I.C. § 39-117). Criminal actions can be brought by the attorney general or by the county prosecuting attorney (I.C. § 39-109).

The director can employ counsel within the department or retain private counsel to assist in the enforcement of the legislation and regulations (Ibid.).

4.2. ADMINISTRATION OF THE LAWS

The following agencies are involved in the administration and implementation of Idaho's water quality laws:

4.2.1 Department of Health and Welfare

The policy making body for water quality control in Idaho is the Board of Health and Welfare which consists of seven members chosen by the Governor "with due regard to their knowledge and interest in environmental protection and health" (I.C. § 39-107). The Board also functions as a hearing board for administrative actions concerning compliance with its rules and regulations (Ibid.). Judicial review of these administrative decisions can be secured by filing a petition for review in the district court for the county where the adversely affected party resides (Ibid.).

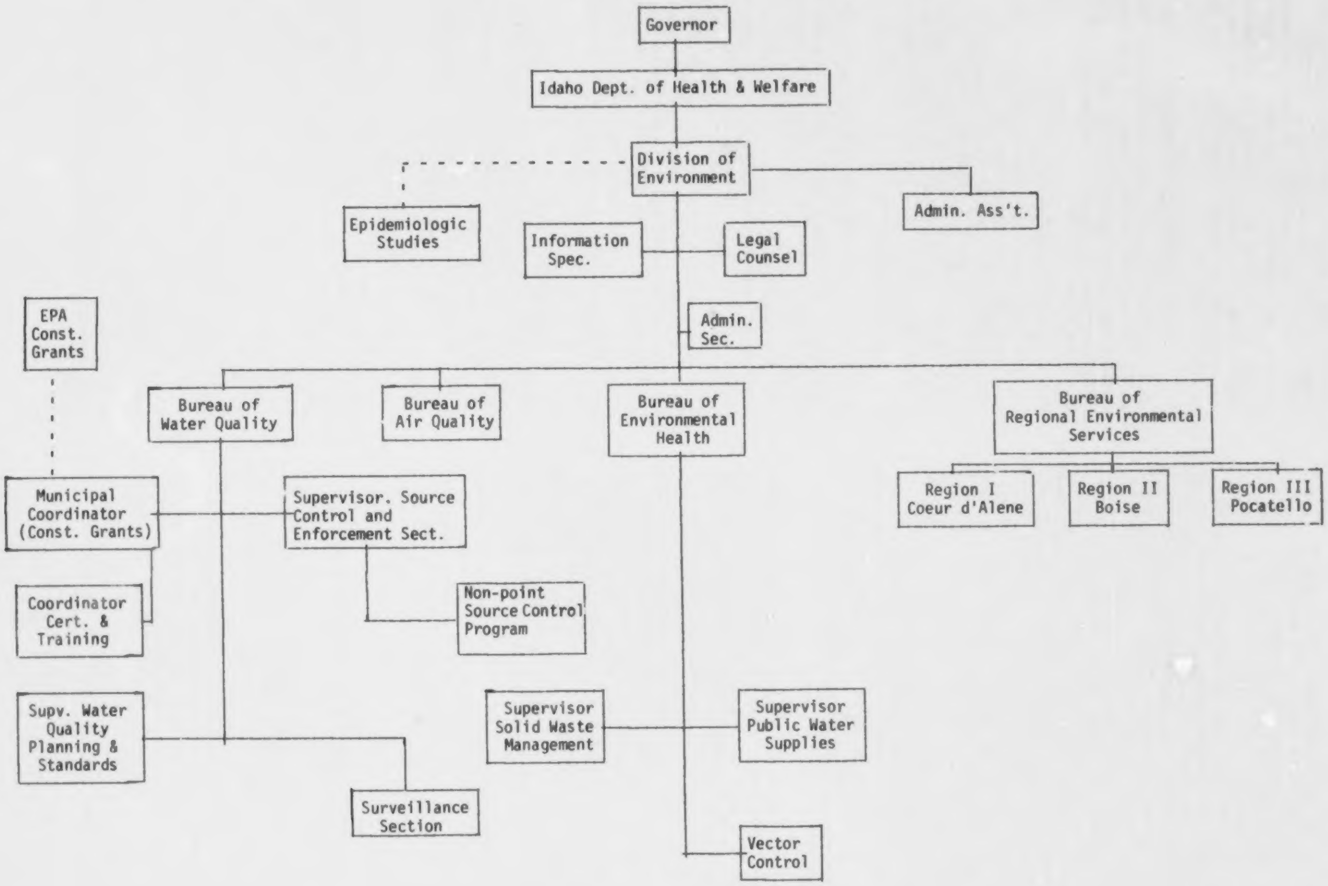
Actual administration and enforcement of the act and the Board's rules is delegated to the Director of the Department of Health and Welfare (I.C. § 39-105). Water quality control is primarily the responsibility of the department's Division of Environment and specifically the Bureau of Water Quality (See Figure 1). The Governor is given the authority to organize the department into sub-state administrative regions to provide more effective and economical delivery of services.

4.2.2 Department of Water Resources and Water Resources Board

In the mid-1960's, Idaho adopted a constitutional amendment calling for the creation of a water resources agency as prescribed by the legislature to formulate and implement a state water plan for optimum development of water resources in the public interest, construct and operate water projects, and generally to administer the state's water rights systems, projects and related funding (Idaho Constitution, Art. XV, Sec. 7). Subsequently, in 1965, the legislature established the Water Resources Board to achieve the objectives of a coordinated, integrated, multiple use water resource policy in Idaho (I.C. § 42-1731). Also created was an administrative agency to carry out the Board's policies. The Department of Water Administration existed until 1974 when the 42nd Idaho Legislature reorganized the water agency into the current Department of Water Resources (see Figure 2). All the functions of the Water Resources Board and former Department were transferred to the new Department in an effort to bring all water matters, except water pollution control, under one agency (Annual Report, 1975, p. 9). Now the eight-member board functions within the Department of Water Resources. The board has been delegated broad powers by the legislature (I.C. § 42-1734). Among those powers and duties are the following which directly concern water quality:

> (4) Subject to the primary use of water for the beneficial uses now or hereinafter prescribed by law, minimum stream flow for aquatic life and the minimization of pollution shall be fostered and encouraged and consideration shall be given to the development and protection of water recreation facilities;
>
> (5) Watershed conservation practices consistent with sound engineering and economic principles shall be encouraged . . .
>
> > (q) To study and examine pollution of rivers, streams, lakes and ground water, and to advise, cooperate and counsel with the state board of health and welfare in a manner designed to avoid inhibition of economic development and

Figure 1. Organization of Idaho Water Quality Control


Governor
Idaho Dept. of Health & Welfare
Division of Environment
Epidemiologic Studies
Admin. Ass't.
Information Spec.
Legal Counsel
Admin. Sec.
EPA Const. Grants
Bureau of Water Quality
Bureau of Air Quality
Bureau of Environmental Health
Bureau of Regional Environmental Services
Region I Coeur d'Alene
Region II Boise
Region III Pocatello
Municipal Coordinator (Const. Grants)
Supervisor. Source Control and Enforcement Sect.
Coordinator Cert. & Training
Non-point Source Control Program
Supv. Water Quality Planning & Standards
Surveillance Section
Supervisor Solid Waste Management
Supervisor Public Water Supplies
Vector Control

> at the same time insure the right of the people to comfortably enjoy our water resources and accomplish the establishment of water quality criteria; . . . (Ibid.).

On all projects involving the impoundment of more than 10,000 acre-feet of water, the proposal must be submitted to the board for approval (I.C. § 42-1737). The standard duties and responsibilities of the Department of Water Resources include establishment of a state water policy, provisions of supervisory and technical assistance, administration of permit and license systems for water rights and assistance to the courts in adjudicating the rights, development and implementation of a state water plan, measurement of the flow and quality of the state's streams, and conducting investigations, surveys, designing projects and formulating plans to better utilize the state's water. In addition to these "quantity"-oriented duties, the Department is also required to cooperate and coordinate matters concerning water quality with the Division of Environment (I.C. § 42-1805(5)). As such, the agencies have collaborated on water quality studies, stream channel alterations, waste water disposal and injection wells dredge permits in navigable waters and state water planning (Statewide Water Quality . . . Report, 1976, p. 154). See Figure 2 for organization chart of the water rights administration.

Although one noted publication has stated that "There are no environmental protections built into the Idaho statutes governing the appropriation of water"(A Summary-Digest of State Water Laws, National Water Commission, Washington, D.C., 1973), some provisions concerning waste of appropriated waters are of interest. First, local watermasters are given the authority to refuse or allow water to be supplied to an appropriator who does not maintain suitable headgates or controlling works at his point of diversion (I.C. § 42-701). The standards are established by the department, but watermasters are elected and salaried by the water users. Furthermore, there is no express statutory authority for the department to remove a watermaster for the nonperformance of his duty.[1]

Secondly, water users who: (1) use more water than good agronomic husbandry requires or (2) use an excess of water from another's ditch or canal are liable for the damages sustained by others due to their wasteful practices (I.C. § 42-916).

4.3 SPECIAL LEGISLATION

4.3.1 Water Pollution Control Fund and Water Pollution Control Bonds

A separate fund has been created in the Idaho State Treasury (I.C. § 39-3605); namely, the Water Pollution Control Fund. These funds are to be used for the following purposes:

(1) To provide the state's matching share of grants to local governments; and

(2) To provide revenue for the repayment of general obligation bonds which are authorized by Article VIII § 5 of the Idaho Constitution (I.C. § 39-3606).

Article VIII § 3A gives counties the authority to issue revenue bonds for the purpose of "acquiring, constructing, installing and equipping facilities designed for environmental pollution control . . . " (Idaho Const. Art VIII §3A). It should be noted that there is no 5 of Article 8 of the Idaho Constitution. A proposal for such an amendment was introduced in the 1970 session, but was not adopted. Provision for Water Pollution Control Bonds is contained in the appendix to the Idaho Code.

4.3.2. Waste Disposal and Injection Well Act

The Waste Disposal and Injection Well Act (I.C. §42-39 is administered by the Department of Water Resources and applies to irrigation disposal wells. There are numerous irrigation disposal wells, particularly over the Snake Plain Aquifer.

4.3.3 Waters in Public Trust

In 1971, the Idaho Legislature authorized the State Park Department to appropriate, in trust, certain natural springs because of their scenic beauty and recreational value (I.C. §§67-4307 to 67-4312). Also, the Governor is given the authority to appropriate, in trust, specific scenic lakes to preserve them in their present condition (I.C. §§67-4301 to 67-4306).

4.4 RELATED LEGISLATION

4.4.1

County Irrigation, Drainage, and Reclamation Projects

Boards of County Commissioners are authorized to construct and maintain "public drainage or irrigation systems, reservoirs, drains and ditches and other irrigation or drainage works for the irrigation or drainage of land within the county (I.C. §42-2801). Before such action can be undertaken, the required landowner petition must be submitted to the board (I.C. §42-2804). The petition is sent to the Director of the Department of Water Resources, who reports to the board on the practicability or feasibility of the plan as outlined in the petition (I.C. §42-2805).

Financing is accomplished by the issuance of bonds which are repaid by assessments against benefited property (I.C. §§42-2811 to 42-2818).

4.4.2 Drainage Districts

Those areas of a county which require drainage or diking can be organized into a drainage district(I.C. §42-2905). Financing is handled by assessments levied against benefited lands (I.C. §42-2936). Drainage districts are governed by three drainage commissioners who are initially appointed and are subsequently elected to office (I.C. §42-2910).

4.4.3 Flood Control Districts

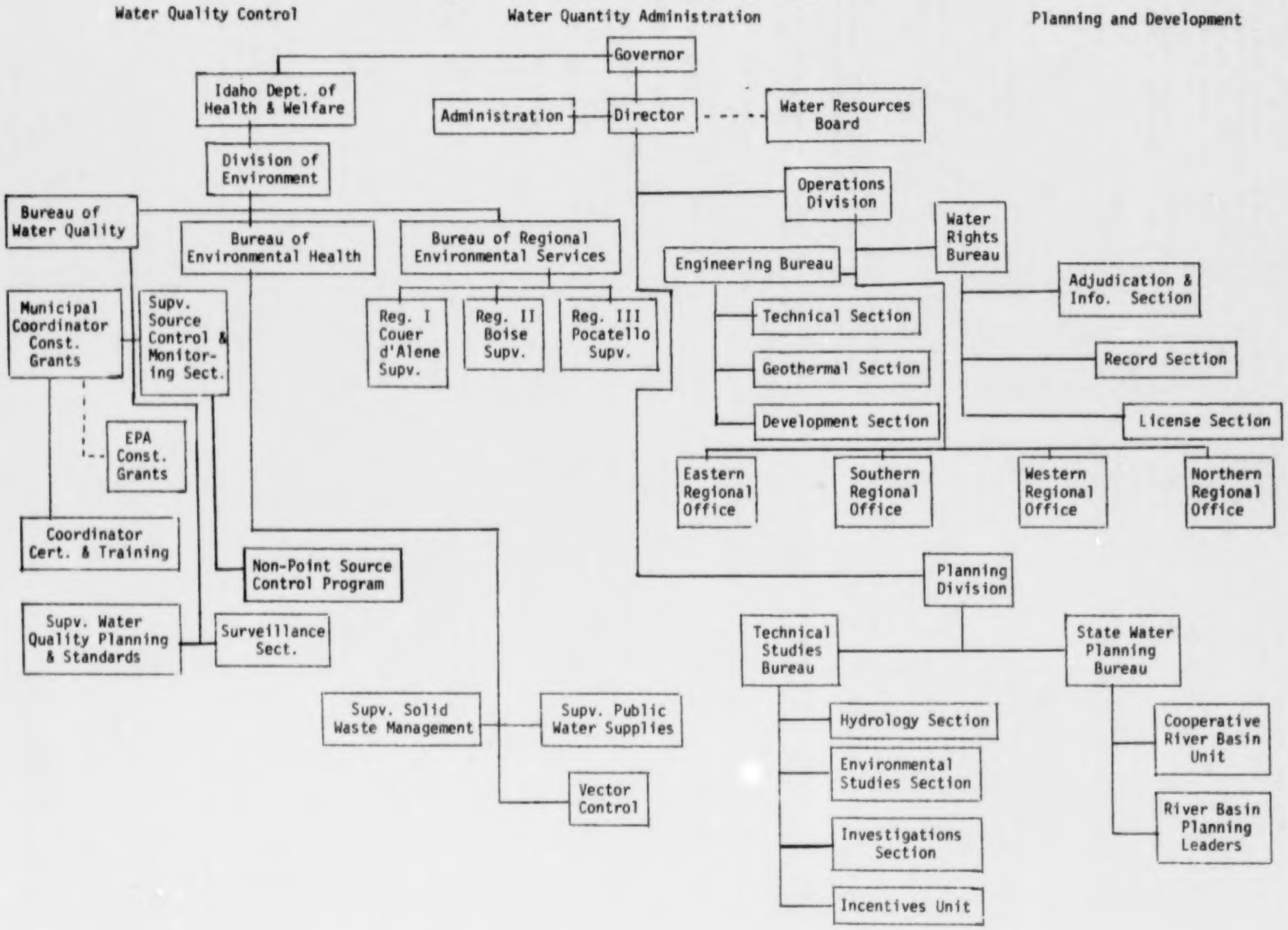
The purpose for the creation of flood control districts is to assist the United States and to obtain the assistance of the United States, in maintaining navigability and flood prevention and control of the waters of any navigable stream, or any stream, lake, or watershed tributary thereto (I.C. §43-3101). Organization is by petition submitted to the director of the Department of Water Resources (I.C. §24-3103). The Director schedules a hearing in the area of the proposed district and can decide whether or not to enter an order approving the petition (I.C. §42-3106).

District affairs are controlled by an elected board of commissioners who are initially appointed to office by the county district court (I.C. §42-3107). Financing is provided by assessment, federal funding, and the sale of developed and stored waters (I.C. §§42-3115 to 42-3118).

---

[1] The practical problems of this situation are discussed in"The Idaho System for the Distribution of Water Among its Appropriators: an Examination and Assessment," 9 Idaho L. Rev. 187, 194 (1973).

Figure 2. Idaho Water Agencies and Functions



4.4.4 Water and Sewer Districts

The districts are created for the purpose of providing domestic water supplies and sewage disposal within or beyond municipal boundaries (I.C. § 42-3202). Organization involves the process of submitting the required petition to the county district court, which then holds a hearing on its merits and issues a court decree on the formation of the district (I.C. §§ 42-3203 to 42-3207). Later, an election is held on the formation of the district and its board of directors (I.C. § 42-3208). Financing is accomplished through the issuance of bonds and the collection of tax levies (I.C. §§ 42-3214 to 42-3227).

4.4.5 Irrigation Districts

Idaho statutes contain extensive provisions regarding the formation and operation of Irrigation Districts (I.C. §§ 43-101 through 43-2112). Briefly, districts are formed by submission of a petition to the board of county commissioners (I.C. § 43-102). Following a public hearing on the petition, an election is held to select the district's board of directors (I.C. § 43-109). Copies of all plans and papers filed with the board are to be examined by the Department of Water Resources and a report submitted to the board (I.C. § 43-107).

Financing is accomplished through issuance of bonds which are repaid by assessments (I.C. §§ 43-401 to 43-413).

4.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

4.5.1 Agriculture Generally

Idaho has given considerable attention to the impact of water use by agriculture both in terms of maximum utilization of the state's water resources and possible pollution problems that occur through diversions and application of waters for irrigation. It was noted in the Interim State Water Plan that "high rates of diversion and application of irrigation water have created drainage problems" through "excess canal seepage lanes, excess irrigation application, poorly planned land development, and lack of natural or mechanical drains" (1972, p. 88). This interim plan report, completed prior to passage of P.L. 92-500 and the efforts by EPA to implement a permit program for agricultural return flows, was in response to guidelines issued by EPA in January 1971, calling for interim basin and/or regional metropolitan plans by July 1973 and "fully developed plans" in subsequent years. Since the fully developed plans were to focus on non-point sources of pollution and means for improving future water quality, the State directed study programs be carried out on a statewide basis to gather necessary data. Among the study programs is the identification of water quality problems generated by irrigation return flows and the development of solutions (Interim Report, 1972, p. 94).[2] It was recognized that improved irrigation efficiency would tend to minimize irrigation as a source of pollution (Ibid., p. 102).

Subsequently, in 1973 in response to P.L. 92-500 requirements, the Idaho Department of Environmental and Community Services adopted Rules and Regulations for the Establishment of Standards of Water Quality and for Wastewater Treatment Requirements which defines the term "pollutant" to include "agricultural waste or other materials which, when discharged to water, cause or contribute to water pollution" (p. 3). "Wastewater" is defined as, "sewage, industrial waste and associated solids or combination of these, whether treated or untreated, plus any admixed runoff from the land" (Ibid). Beyond this acknowledgment of agricultural sources of pollution, no other sections have application to agriculture in general. Section X.F. (Ibid. p. 84) addresses "accumulations of manure" with respect to runoff.

4.5.2 Irrigation Return Flows

Accepting the designation of irrigation return flows as a point source within the three categories of agricultural pollution sources (the other two categories are fish hatcheries and feedlots), the Division of Environment (DOE) cooperated with EPA in an effort to implement the initial attempt at permitting irrigation return flows. Since EPA was administering the permit program, DOE did not develop any forms of its own (letter to Principal Investigator from DOE dated Jan. 23, 1975). As of May, 1975, 28 NPDES permits were issued, of which 17 were on appeal (Idaho Water Quality Status Report, 1975, p. 42).

These permits were issued only to irrigation districts and large supply companies. The permits do not include compliance with numerical standards, but rather required the permit holder to study the problem. And although there is no compliance schedule for the irrigation return flow permits, five steps must take place. They are:

1. The permittee must propose monitoring locations for supply and return waters.
2. After a reasonable time, the permittee must monitor the quantity and quality of both supply and return waters.
3. The permittee must then identify means for controlling the wastewater sources.
4. Subsequently, the permittee must provide an inventory of non-irrigation pollution sources.
5. Last, a program for minimizing the pollution, where a problem has been identified, must be submitted to EPA.

(Statewide Water Quality . . . Report, 1976, p. 37.) This schedule will be changed under the new "general permit" program for irrigation return flows.

The water users appealing their permits contend among nineteen general and special reasons that irrigation return flow is a non-point source of pollution and that the irrigation companies and districts have no authority to control discharges by individuals into drainage systems (see Request for Adjudicatory Hearing, NPDES Permit AB. ID-002143-1, submitted by Twin Falls Canal Co. to the Administrator of Region X in Oct. 1974).

Thus, regarding irrigation return flow control in Idaho as a point source, very little is being accomplished under the original EPA permit program. The DOE has stated, however, that the State and several irrigation entities have taken a different approach than EPA to abate pollution from irrigation return flows. Their approach is:

> . . . The State, first of all, considers the problem to be in most cases a point source. Secondly, abatement of the problem should be on a voluntary basis for a period of time, and then mandatory requirements should be established at a later date. This would allow for the development of "on-farm" abatement techniques and better irrigation management practices to solve the problem instead

---

[2] A study of importance that was recently released is Incentives for Improved Water-Use Efficiency, 1976).

of costly treatment facilities (Statewide Water Quality . . . Report, 1976, p. 31).

In mid-1976 no specific controls had been developed for irrigation return flows, although it was felt controls would be essential to meet the water quality standards (letter to Principal Investigator from D.O.E., dated June 4, 1976).

Even though the State has taken the position that irrigation return flow is for the most part a point source, the non-point source aspects have not been ignored. In discussing their control program for nonpoint sources, twelve conditions which distinguish this source of pollution from the point source discharge through a discrete pipe or ditch are given which are most useful in delineating the complexity of the problem. These twelve conditions are that nonpoint pollution:

(1) involves the cumulative degradation of water quality from diffuse sources, including runoff, drainage, leachates, seepage, spills and percolation;
(2) involves degradation of ground water as well as surface waters;
(3) is caused by activities of man;
(4) is intermittent in most cases;
(5) relates at least in part to certain uncontrollable climatic events;
(6) arises over an extensive area of land and is in transit over land or through the soil before the pollutants enter surface or ground waters;
(7) generally cannot be monitored at its point of origin and is not always traceable to its exact source;
(8) must occasionally be monitored on the land rather than in the water;
(9) must be controlled by conservation practice or site-specific management;
(10) cannot always be measured in terms of effluent limitations;
(11) usually is derived from consecutive operations over an extensive land area, as opposed to repetitive operations on intensive units of land; and
(12) varies significantly in both quantity and quality due to the above factors (Statewide Water Quality . . . Report, 1976, pp. 61-62).

Not too much has been accomplished in controlling nonpoint pollution because of its recent recognition and the number of agencies directly or indirectly involved in some aspects of influencing non-point pollutions. A study completed in late 1975 identified a host of programs being carried out by twelve federal agencies, six state agencies and numerous local and regional entities (Survey of Nonpoint Source Pollution Programs, 1975). These programs are also evaluated in the report.

DOE has developed a long-range strategy that will be updated annually consisting of six components: (1) statewide nonpoint source management plan, (2) development of best management practices, (3) cooperation with other agencies, (4) formation of a technical advisory committee (TAC) from representatives of the various agencies involved, (5) development of an information program to inform the public, and (6) stimulation of public participation in keeping the program dynamic (Statewide Water Quality . . . Report, 1976, pp. 110-114). Major agricultural and non-point source pollution problems are being addressed in the statewife 208 planning program. Two demonstration projects for irrigated and dryland pollution problems have been implemented and the State Soil Conservation Commission is developing a statewide agricultural pollution abatement plan.

4.6 CASE LAW APPLICABLE TO AGRICULTURE

To date there has been no reported litigation involving the substantive portions and specifically water pollution control measures of the Environmental Protection and Health Act. Eight actions against water pollutors under common law doctrine have been reported (Wood, 1971). All of these decisions involved suits by private parties to enjoin a public nuisance, requiring that special injury beyond that suffered by the common public be demonstrated by the plaintiff (Ibid.).

The only significant case in the area of agricultural use of water is Ravndal v. Northfork Placers, 60 Idaho 305, 91 P.2d 368 (1939). In that case, plaintiff's ditches and crops were injured by the hydraulic mining process employed by the defendant mining company. The Idaho Supreme Court affirmed the damage judgment awarded by the district court and held that:

> Numerous authorities announce the doctrine that while a prior use of the water of a stream for mining purposes necessarily contaminates it to some extent, such contamination or deterioration of the quality of the water cannot be carried to such a degree as to inflict substantial injury upon another user of the waters of said stream (Ibid., at 371).

In spite of this result, one law review article has stated that private nuisance actions have "provided virtually no incentive to the offenders to reduce their harmful discharges into the waterways" (Wood, 1971).

4.7 INFORMATION SOURCES

Annual Report, Idaho Department of Water Resources, Fiscal Year 1975, Dec. 1975.

Hutchins, "The Idaho Law of Water Rights," 5 Idaho L. Rev. 42, 1968.

________, Idaho Environmental Overview, James M. Montgomery, Consulting Engineers, Inc., Boise, for State of Idaho, Nov. 1975.

________, Idaho Water Quality Status, Idaho Department of Health and Welfare, Division of Environment, Boise, May 1975.

Note, "The Idaho System for the Distribution of Water Among its Appropriators: an Examination and Assessment," 9 Idaho L. Rev. 187, 1973.

Note, "Water Pollution Law in Idaho," 1 Idaho L. Rev. 111, 1964.

________, Statewide Water Quality Management Planning Report, Idaho Department of Health and Welfare, Division of Environment, Bureau of Water Quality, Boise, May 1976.

________, Survey of Nonpoint Source Pollution Programs, by James M. Montgomery, Consulting Engineers, Inc., Boise, Idaho, for Idaho Department of Health and Welfare, Division of Environment, Jan. 1976.

________, Water Quality Standards and Wastewater Treatment Requirements, Idaho Department of Environmental and Community Services, Boise, June 1973.

Wood, T. V., "Water Pollution Control in Idaho: State and Federal Laws," 8 Idaho L. Rev. 94, 1971.

APPENDIX A

5. KANSAS

5.1 SUMMARY OF WATER QUALITY LAWS

In 1907, the Kansas legislature enacted a stringent water pollution law, which remains in basically the same form today. This law required all entities which discharged sewage into state waters to obtain a permit (K.S.A. § 65-164, 1972). This requirement applied to all industrial as well as municipal polluters because sewage was defined under this law as "chemical or other waste from domestic, manufacturing or other forms of industry" (Ibid.).

According to one author, this law's stringency has been just a potential for pollution control since its enactment in 1907 because "other sections of the law create ambiguities that have been used by the Kansas State Board of Health, to justify its failure to take effective action" (Coggins, 1972). This author goes on to state that,

> . . . the 1907 statute set up a restricted complaint-administrative hearing-lawsuit procedure to handle violations, but this procedure was aimed only at pollution prejudicial to the health of any of the inhabitants, and abatement was the only remedy. Moreover, the section providing the permit procedure did not refer specifically to industrial polluters, and the reporting requirements did not seem to apply to industries (K.S.A. §§ 65-164 to 166).

In 1937, a conservation district law was enacted (L. 1937, ch. 5, § 1). This act declared that:

> the farms and grazing lands of the state of Kansas are among the basic assets of the state and that the preservation of these lands is necessary to protect and promote the health, safety, and general welfare of its people; that improper land-use practices have caused and have contributed, and are now causing and contributing to, a progressively more serious erosion of the farm and grazing lands of this state by wind and water . . . the consequences of such soil erosion in the form of soil blowing and soil washing are the silting and sedimentation of stream channels, reservoirs, dams, ditches . . . (K.S.A. § 2-1902).

This act also set forth the appropriate corrective methods in order to:

> . . . conserve soil resources and control and prevent soil erosion and reduce flood damages and to provide for the conservation, development, utilization and disposal of water, it is necessary that land-use practices and structural works of improvement be adopted and carried out: that among the procedures necessary for widespread adoption, are the carrying on of engineering operations such as the construction of terraces, terrace outlets, check dams, dikes, ponds, ditches, detention dams, grade stabilization structures, channel improvements, floodways, water resource developments and the like; the utilization of strip cropping; lister furrowing; land irrigation; seeding and planting of waste, sloping, abandoned, or eroded lands to water-conserving and erosion-preventing plants, trees, and grasses; forestation and reforestation; rotation of crops; soil stabilization with trees, grasses, legumes, and other thick-growing soil-holding crops, retardation of runoff by increasing absorption of rainfall; and retirement from cultivation of steep, highly erosive areas and areas now badly gullied or otherwise eroded (K.S.A. § 2-1902(c)).

In 1948, Kansas undertook a study of pollution throughout the large river basin of the Kansas River (Metsler, 1957). The State Health Department of Nebraska, the Bureau of Reclamation, the Corps of Engineers and the United States Public Health Service, undertook this cooperative study of the Kansas River and its tributaries. Public hearings were held to explain the study's findings and in April, 1950, the Kansas State Board of Health (which was created in 1949) adopted a policy from this study providing a means and a time limit for large and small cities, to provide for sewage treatment (Kan. G.S. 1949, 65-165, to 171 (f)).

The State Board of Water Resources was created in 1955. It numbered among its duties that of making a study of the laws relating to the conservation and development of water resources, appropriation of water for beneficial use, flood control, construction of levees, drainage, irrigation, soil conservation, watershed development, stream control, gauging of stream and stream pollution. These duties were delegated to the Board in order to make a determination of the necessity of enacting new or amendatory legislation in these areas (K.S.A. § 74-2608 (4), L. 1955, ch. 356, § 4; L. 1967, ch. 420, § 1; July 1).

In 1962, the Kansas State Board of Health conducted a study which estimated that a feedlot with 10,000 head of cattle produces as much waste as half a million people and that agricultural runoff from feedlots was the greatest hazard to the quality of Kansas waters (Coggins, 1972).

The Kansas State Board of Health, in 1965, promulgated regulations dealing with the construction and use of underground storage reservoirs and the construction and use of disposal wells and surface ponds for the confinement, storage and disposal of industrial fluids including . . . brines (L. 1965, ch. 506, Sec. 1 (4) p. See K.S.A. §§28-13-1 to 28-13-11, Environment Reporter, State Water Laws, vol. 1, § 781:0541). During this same year, this Board drafted regulations dealing with sewage discharge permits and river basin policies (State Board of Health Regulations, 28-16-1 to 28-16-7, Effective Jan. 1, 1966).

The Kansas State Board of Health promulgated Kansas Agricultural Waste Regulations in 1967 (K.S.A. §§ 28-18-1 to 28-18-4). These regulations required operators of proposed confined feeding operations to register with the Kansas State Department of Health (State Board of Health Regulations, 28-18-2 (a)). If the Department finds that a particular confined feeding operation constitutes a water pollution potential, the operator must provide water pollution control facilities constructed in compliance with plans and specifications which have received the approval of the Department (State Board of Health Regulations, § 28-18-2). These facilities cannot begin operation until a permit has been issued by the executive secretary of the Kansas State Board of Health (K.S.A. § 28-18-2 (e)).

In 1967, extensive amendments were made to the 1907 water pollution laws (Kan. L. 1967, ch. 333 § 1-6, April 28, 1967). These amendments expanded the powers of the Kansas State Board of Health and provided that a permit to a polluter be granted only if it would serve the interests of the general public, or if the discharge would not detract from the quality necessary for beneficial use (K.S.A. § 65-165).

One year later, the State Board of Health enacted a regulation which stated that:

> The owner or person responsible for the discharge of sewage or other materials detrimental to the quality of waters of the state . . . shall report such discharge to the state department of health, environmental health services (State Board of Health Regulations 28-16-27).

Kansas' statutory framework was unchanged by the Water Pollution Control Act of 1970 (K.S.A. §§65-3301 to 3307). This Act was created in response to the 1970 federal water pollution amendments and its sole purpose was to obtain federal sewage grant money (Coggins, 1972).

Kansas adopted water quality criteria for interstate and intrastate waters in 1973 (Authorized by K.S.A. § 65-165-171 d, Criteria adopted April 13, 1973, Amended October 12, 1973 Effective November 26, 1973, See Environment Reporter, State Water Laws, vol. 1, §§ 781:0501 to :0505). This topic will be discussed in greater detail in the appropriate section.

The Kansas Legislature also enacted the Kansas Water Pollution Information Act in 1973 (Senate Bill No. 510, Session of 1973, Approved April 11, 1973. See Environment Reporter, State Water Laws, col. 1, § 781:0109). This Act requires that records, reports, data, or other information that is obtained which is relative to sources of discharge of water pollutants be made available to the public.

On July 1, 1973, the Governor of Kansas signed legislation which permitted the State Health Department to administer a program which would allow Kansas to participate in the national pollution discharge program (Environment Reporter, Current Developments, May 1, 1973 to April 30, 1974, p. 280). However, on September 28, 1973, the Environmental Protection Agency denied Kansas' request for approval of its permit program (Environment Reporter, Current Developments, May 1, 1973 to April 30, 1974, p. 913; see also 365).

Statutes relating to water supply and sewage were enacted in 1974 (K.S.A. §§ 65-161 to 171; L. 1974, ch. 352, § 21, July 1). Basically, these statutes require a permit for the discharge of sewage and will be examined in greater detail in the applicable section. The Kansas Legislature also enacted a statute in 1974 which gave the Secretary of Health and Environment and the local boards of health the power to examine all nuisances (L. 1974, ch. 352, § 20; July 1, K.S.A. § 65-169).

Effective April 29, 1974, the Kansas State Board of Health promulgated regulations in order to comply with all requirements of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) concerning the National Pollutant Discharge Elimination System (Authorized by K.S.A. 1974 Supp. 65-165, 174 S.B. 698, Sec. 1, L. 1974 Supp. 65-171d, 1974 S.B. 698, Sec. 2, L. 1974, Sec. 2). On June 28, 1974, the Environmental Protection Agency granted Kansas the authority to issue NPDES permits (Environment Reporter, Current Developments, May 1, 1974 to April 30, 1975, p. 326).

5.1.2 Policy

The Kansas Legislature has set forth its policy in K.S.A. § 2-1902 (D) to:

> provide for the conservation, use and development of the soil and water resources of this state, and for the control and prevention of soil erosion and flood damages, and thereby to preserve natural resources, control floods, prevent impairment of dams and reservoirs, assist in maintaining the navigability of rivers and harbors, preserve wild life . . . protect public lands, and protect the health, safety, and general welfare of the people of this state (L. 1937, ch. 5, § 2; L. 1955, ch. 7, § 1; April, 13).

In regard to solid waste disposal, the Kansas Legislature has declared:

> that protection of the health and welfare of the citizens of Kansas required the safe and sanitary disposal of solid wastes. The legislature finds that the lack of adequate state regulations and control of solid waste and solid waste management systems has resulted in undesirable and inadequate solid waste management practices that are detrimental to the health of the citizens of the state, degrade the quality of the environment; and cause economic loss. For these reasons it is the policy of the state to:
> (a) Establish and maintain a cooperative state and local program of planning and technical and financial assistance for comprehensive solid waste management.
> (b) Utilize the capabilities of private enterprise as well as the services of public agencies to accomplish the desired objectives of an effective solid waste management program.
> (c) Require a permit for the operation of solid waste processing and disposal systems (L. 1970, ch. 264, § 1; July 1, K.S.A. § 65-3401).

5.1.3 Classification

Water uses in Kansas are grouped into either Class A or Class B waters (Kansas Water Quality Criteria, authorized by K.S.A. §§ 65-165 to 65-171 d; Adopted April 13, 1973; Amended October 12, 1973, Effective November 26, 1973, Environment Reporter, State Water Laws, Vol. 1, §§781:0501 to :0505).

Class A waters are protected for the following uses:

> 1. Body contact recreation. These waters are intended for uses where the human body may come in direct contact with the raw water to the point of complete submergence with the possibility of ingestion, such as swimming, water skiing and skin diving.
> 2. The preservation and propagation of desirable species of fresh warm water aquatic biota, semi-aquatic life, waterfowl, and wildlife.
> 3. Public water supply.
> 4. Industrial water supply.
> 5. Agricultural purposes (Environment Reporter, State Water Laws, vol. 1, § 781:0501, Emphasis added).

Class B waters are protected for the following uses:

1. Secondary contact recreation. These waters are intended for uses such as fishing, wading, boating or other activities where ingestion of the water is not probable.
2. The preservation and propagation of desirable species of fresh warm water aquatic biota, semi-aquatic life, waterfowl, and wildlife.
3. Public water supply.
4. Industrial water supply.
5. *Agricultural purposes* (*Ibid*., Emphasis added).

All waters which annually reach zero natural flow are exempted from water use classification and water quality criteria (*Environment Reporter*, State Water Laws, vol. 1, § 781:0502) with the exception of those waters that can be reasonably expected to support aquatic wildlife because of pooling during periods of no flow (*Environment Reporter*, State Water Laws, vol. 1, § 781:0503).

5.1.4 Standards

In order to prevent water pollution, the Kansas State Board of Health is authorized to make rules "including registration of potential sources of pollution" and to "establish water quality standards for the waters of the state to protect their beneficial uses" (K.S.A. § 65-164, 171 d).

Pollution is defined:

> (a) as such contamination, or other alteration of the physical, chemical or biological properties of any waters of the state as will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to public health, safety or welfare, or to the plant, animal, or aquatic life of the state, or to the designated beneficial uses, or (b) as such discharge as will or is likely to exceed state effluent standards predicated upon technologically based effluent limitations (K.S.A. § 65-171 d).

Kansas water quality standards are divided into general and specific criteria.

General Criteria

> The cumulative effect of waste discharges to waters of the state will be guided by the 1962 U.S. Public Health Service drinking water standards. Pollutional substances contributed by man-made point source waste discharges shall be maintained below maximum permissible concentrations which would be detrimental for public water supplies, the preservation and propagation of desirable diversified aquatic life, recreational requirements, agricultural needs, industrial needs, and other established beneficial use. All waters shall be controlled so that public health hazards or nuisance conditions will not develop due to man-made point source discharge (*Environment Reporter*, State Water Laws, Vol. 1, § 781:0502).

Specific Criteria

> A. Bacteria
> 1. In Class A waters, the fecal coliform content based on not less than five samples taken during separate 24-hour periods over not more than a 30-day period, shall not exceed a geometric mean of 200 per 100 ml sample, nor shall more than 10 percent exceed 400 per 100 ml sample.
> 2. In Class B waters, the fecal coliform content shall not exceed 2,000 per 100 ml sample. It is recognized that the bacterial criteria for Class A and B waters will be violated as a result of contributions from natural non-point sources during periods when those waters are being influenced by surface runoff.
> B. Dissolved Oxygen
> 1. In Class A waters, the dissolved oxygen content shall be maintained at or above 5 mg/l. Dissolved oxygen concentrations less than 5 mg/l shall not be due to man-made point source waste discharges.
> 2. In Class B waters, the dissolved oxygen shall be maintained at or above 5 mg/l (except for 4 mg/l for short periods of time within a 24-hour period). Dissolved oxygen concentrations less than the above levels shall not be due to man-made point source waste discharges . . .
> D. pH
> Man-made point source waste discharge shall not cause the pH of waters of the state to vary below 6.5 nor above 8.5.
> E. Ammonia
> Man-made point source waste discharge shall not cause the undissociated ammonium hydroxide concentration of waters of the state to exceed 0.15 mg/l as N. . . .
> G. Solids
> There shall be no man-made deposits of solids in waters of the state, either organic or inorganic, which will be detrimental to established beneficial use. All waters shall be free of floating debris, scum, and other floating materials attributable to municipal, industrial, or other waste disposal practices in amounts sufficient to be unsightly or detrimental to established beneficial use.
> H. Turbidity
> There shall be no turbidity increase in waters of the state, of other than natural origin, that will cause substantial visible contrast with the natural appearance of the water or be detrimental to established beneficial use.
> I. Taste and Odor Producing Substances
> Taste and odor producing substances from man-made point sources shall be limited to concentrations in the receiving water that will not interfere with the production of potable water by reasonable water treatment processes, or impart unpalatable flavor to fish, or result in noticeable offensive odors in the vicinity of the water, or otherwise interfere with established beneficial use of the water.
> J. Color
> Man-made point source discharges of color producing substances shall be limited to concentrations which will not be detrimental

> to established beneficial use of the receiving water.
>
> K. Toxic Substances
>
> Toxic substances or synergistic effects of toxic substances from man-made point sources shall be limited to concentrations in the receiving water that will not be harmful to human, animal, plant or aquatic life, or otherwise interfere with established beneficial use of the water (Environment Reporter, State Water Laws, vol. 1, § 781:0502).

5.1.5 Permit System

Before discharging sewage into any stream, the discharger must obtain a permit from the Secretary of Health and Environment (K.S.A. § 65-165).

Sewage is defined as:

> any substance that contains any of the waste products or excrementitious or other discharges from the bodies of human beings or animals, or chemical or other wastes from domestic, manufacturing or other forms of industry (K.S.A. § 65-164).

The Secretary will issue a permit if in his opinion, the general interests of the public health would be subserved thereby, or that the discharge of such sewage would not detract from the quality of the waters of the state for their beneficial uses for domestic or public water supply, agricultural needs, industrial needs, recreational needs, or other beneficial use and that such discharge meets or will meet all applicable state water quality standards and applicable federal water quality and effluent standards under the provisions of the Federal Water Pollution Control Act and the 1972 amendments thereto (K.S.A. § 65-165).

The permit must stipulate the conditions on which the discharge will be permitted and must set forth the required treatment to protect beneficial use of the waters of the state.

A water pollution control facility permit is required of the operator of confined feeding operations (Kansas Agricultural Wastes Regulations, Environment Reporter, State Water Laws, Vol. 1, § 781:0701). Applicants for such a permit must submit their application to the Kansas State Department of Health together with supplemental information regarding general features of topography, drainage course and identification of the ultimate primary receiving streams (K.S.A. § 28-18-2).

Provision for a water pollution control facility is not required if the Department determines that a proposed or existing confined feeding operation does not constitute a potential water pollution problem (K.S.A. § 28-18-2(c)). However, if the Department is of the opinion that the confined feeding operation does constitute a water pollution potential, the operator must provide water pollution control facilities (K.S.A. § 28-18-2(d)).

Water pollution control facilities cannot be placed in use until a permit has been issued and is revocable for cause on a thirty-day written notice (K.S.A. § 28-18-2 (e)).

Any person discharging or who had a potential to discharge pollutants into the waters of the state was required to file one copy of the appropriate application with the Division of Environmental Health by December 31, 1974 (Kansas State Board of Health Regulations 28-16-59). Any person proposing commencement of a discharge of pollutants was required to file a complete application no less than 180 days in advance of the date on which the commencement of the discharge of pollutants occurred (Ibid., § 28-16-59, II). The requirement for an application is satisfied by either the payment of the appropriate fee and the filing of a Refuse Act application, or by filing a completed application form which describes the type, category, or size of the discharge, the facilities, or activity and plans, specifications and engineering report in accordance with Kansas State Board of Health Regulations 28-16-1 through 28-16-7 (Id, § III).

If the permit is issued, the Director of the Division of Environmental Health may attach certain conditions including but not limited to:

1. Effluent limitations;
2. Schedule of compliance including any necessary interim dates;
3. Special conditions; and
4. A monitoring program if appropriate (Authorized by K.S.A. § 65-165, 166, 171 d, effective April 29, 1974, § 28-16-60).

If the issuance of a permit is deemed advisable, public notice must be prepared by the Director (Kansas State Board of Health Regulations, § 26-16-61). This notice must contain the following:

1. Name, address, telephone number of the Division and any other places at which interested persons may obtain further information, request a copy of the draft permit, and inspect and copy related forms and documents.
2. Name and address of the applicant.
3. Brief description of the applicant's activities or operations which result in the discharge or potential discharge described in the application (e.g., municipal waste treatment plant, confined animal feeding operation, petroleum refinery).
4. Name of watercourse to which the discharge is made and a description of the location of the discharge indicating whether such discharge is a new or an existing discharge.
5. A statement of the tentative determination to issue or deny a permit; and
6. A brief description of the procedures for the formulation of final determinations, including the 30-day comment period and any other means by which interested persons may influence or comment upon those determinations (Ibid.).

All owners and operators of sewage systems or agricultural activities discharging or having a potential to discharge sewage into waters of the State must have approved water pollution control facilities (Kansas State Board of Health Regulations, § 28-16-62).

Permits are issued for a five-year term and may be modified, suspended, or terminated if any permit condition has been violated, the permit was obtained by misrepresentation, there is a change in any condition that requires a temporary or permanent reduction or elimination of the discharge, or where a standard is more stringent than the current permit effluent limitations (Id, § IV).

5.1.6 Sanctions and Enforcement Measures

The Secretary of Health and Environment and the local boards of health have the authority to examine "all nuisances, sources of filth and causes of sickness that may, in their opinion, be injurious to the health of the inhabitants within any county or municipality in this state" (K.S.A. § 65-159). If such a nuisance is found to exist, the Secretary or local health board can order the owner or occupant to remove the nuisance within 24 hours at his own expense. If the owner refuses to comply, he can be subject to a fine of not less than $10 nor more than $100, with each day's continuance constituting a separate offense.

Whenever a complaint of pollution, or of the polluted condition of any waters, is made to the Secretary of Health and Environment, it is his duty to investigate (K.S.A. § 65-164). The Secretary then has the authority to order that the pollution cease within a reasonable time, or that certain treatment of the pollutant be performed.

Every sewage discharge permit is revocable, or subject to modification and change by the Secretary of Health and Environment (K.S.A. § 65-165). The penalty for the willful or negligent discharge of sewage without a duly issued permit, or the violation of any term or condition of a permit subjects the discharger upon conviction to a penalty of "not less than $2,500 and not more than $25,000 and a further penalty of not more than $25,000 per day for each day the offense is maintained" (K.S.A. § 65-167). Further, the penalty for discharging sewage without filling required reports subjects the discharger to a fine of $1,000 per day for each day the offense is maintained.

Any person who fails to furnish information which is required by the Secretary is deemed guilty of a misdemeanor and upon conviction is subject to a fine of not less than $50 nor more than $500 (K.S.A. § 65-169).

Knowingly making a false statement, representation or certification in any application, record, report, plan or other document or falsifying, tampering with or knowingly rendering a monitoring device inaccurate is punishable upon conviction by a fine of not less than $25 nor more than $10,000 with each day's offense constituting a separate offense (K.S.A. § 65-170 (c)).

Violation of: 1) any term or condition of any sewage discharge permit, 2) any effluent standard or limitation or anv water quality standard or other rule or regulation, 3) any filing requirement, 4) any reporting, inspection or monitoring requirement, 5) any lawful order or requirement, subjects the violator to a civil penalty up to $10,000 for each violation (K.S.A. § 65-170 d).

5.2 ADMINISTRATION OF THE LAWS

5.2.1 Water Quality Laws

Water pollution control in Kansas is largely the responsibility of the Department of Health and Environment (K.S.A. § 75-5601 et. seq. created by 1974 Executive Reorganization order No. 3 issued February 6, 1974, L. 1974, ch. 351). All of the powers, duties, functions, records, property and personnel of the State Board of Health (Kan. Laws 1967, ch. 434, § 25, K.S.A. § 74-901 et. seq. 1964, repealed in 1974) and the State Department of Health are transferred to the Department of Health and Environment (K.S.A. § 75-5602).

The head of the Department is the Secretary of Health and Environment who has the powers, duties and functions which had been given to the Division of Environmental Health, the existing director of Environmental Health and the engineer of the State Board of Health (K.S.A. § 75-5606). This Department consists of the Division of Health and the Division of Environment (K.S.A. § 75-5601).

The Secretary has the power to examine all nuisances (K.S.A. § 65-159), issue sewage discharge permits (K.S.A. § 65-165, 166), order the cessation of pollution (K.S.A. § 65-164), and require treatment or disposition of sewage. The Secretary also has the power to make rules and regulations to prevent surface and subsurface water pollution and soil pollution which is detrimental to public health or to the plant, animal and aquatic life, of the state and to protect beneficial uses of the waters of the state (K.S.A. § 65-1716, 75 § 5602). Further, the Secretary may adopt by reference any regulation relating to water quality and effluent standards promulgated by the federal government (K.S.A. § 65-171 d).

The Director of the Division of Environment must investigate and report all matters that relate to water supply and sewage and the pollution of the waters of the state that come before the Secretary for investigation or action (K.S.A. § 65-170). The Director may make special investigations and any recommendations he deems wise. The Director also has the power to impose a penalty of up to $10,000 for a violation of K.S.A. § 65-170 (d).

The Advisory Commission on Environment advises and consults with the Secretary relating to the management and functions of the Division of Environment and the operation of programs under the Division's jurisdiction (K.S.A. § 75-5615). This Commission consists of seven members who are appointed by the Governor.

5.2.2 Additional Agency Involvement

The Water Resources Board consists of seven members who are appointed by the Governor (K.S.A. § 74-2605). It is the duty of the Board to:

1. collect and compile information pertaining to climate, water, and soil;
2. prepare a plan for the water resource development of each watershed in the state;
3. review plans for water resource development, management and use by any state or local agency;
4. study water resource laws for the purpose of determining the need for amendatory legislation; and
5. make recommendations to other state agencies and political subdivisions for the coordination of water management and conservation practices and studies (K.S.A. § 74-2608).

Further duties of the Water Resources Board include the making of:

a study of the laws of this state and of the other states and of the federal government relating to conservation and development of water resources, appropriation of water for beneficial use, flood control, construction of levees, drainage, irrigation, soil conservation, watershed development, stream control, gauging of stream and stream pollution for the purpose of determining the necessity or advisability of the enactment

> of new or amendatory legislation in this state on such subjects.
>
> . . . recommendations to other state agencies and political subdivisions of the state for the control, construction of levees, drainage, irrigation, soil conservation, watershed development, stream control, gauging of stream, stream pollution, and ground water studies (K.S.A. § 74-2608).

General administrative control of water resources in Kansas is the task of the Division of Water Resources, which is a division of the Board of Agriculture (K.S.A § 75-506a). This division is administered by the Chief Engineer, who is responsible for administering the statutes governing the appropriation and distribution of water (K.S.A. §74-506d, 82a-706). Further, the Chief Engineer may adopt rules and regulations to carry out his duties pertaining to the control, conservation, regulation, allotment and distribution of the water resources of the state (K.S.A. § 82a-706a).

5.3 SPECIAL LEGISLATION

The Water Pollution Control Act was enacted in 1970 because:

> the pollution of waters constitutes a menace to public health, creates public nuisances, is harmful to wildlife, fish and aquatic life, and impairs domestic, agricultural, industrial, recreational and other legitimate beneficial uses of water; and since federal legislation provides incentives for state financial participation in the construction of public water pollution control facilities by increasing the portion of federal aid contributed when the state also participates; the legislature hereby determines that it is essential for the public health, safety and welfare of the state and the residents thereof and advantageous to state and local government taxpayers to undertake a program to financially assist the construction of public facilities to abate and prevent the pollution of water, such program to be undertaken as a cooperative partnership with municipalities and with the United States government and agencies thereof (L. 1970, ch. 263, 1; March 21, K.S.A. § 65-3301).

This Act established the state water pollution control account to provide financial assistance to municipalities in the construction of water pollution control projects which qualify for federal aid and assistance (K.S.A. § 65-3302).

Kansas' Solid Waste Act was also enacted in 1970 (L. 1970, ch. 264 § 3; July 1, amended by L. 1974, ch. 348, § 30; L. 1974 ch. 352 § 157; July 1). This Act makes it unlawful to:

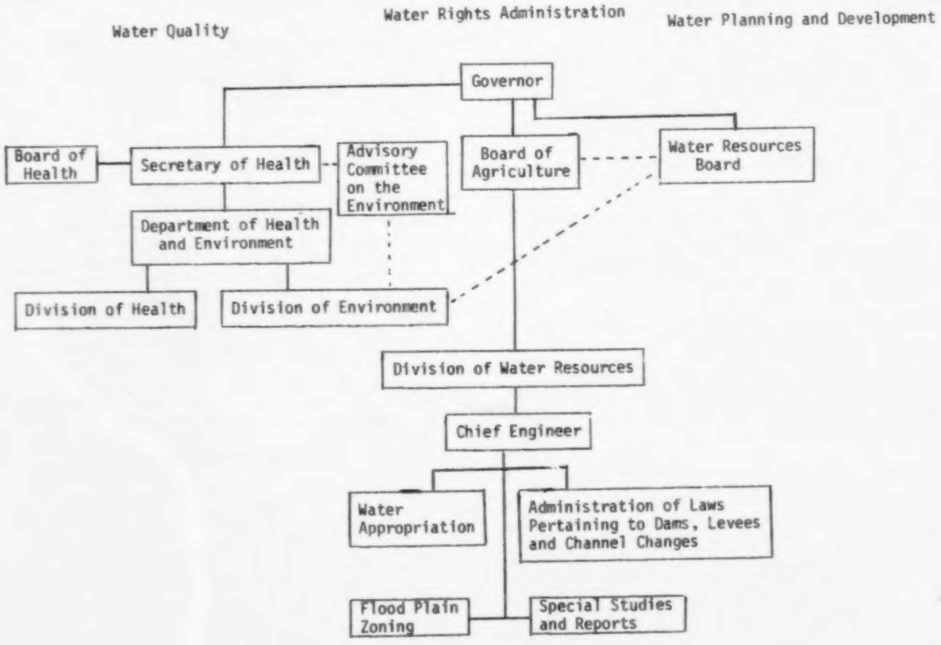
> (a) Dump or deposit, or permit the dumping or depositing of any solid wastes onto the surface of the ground or into the waters of the state without having obtained a permit as required by K.S.A. 65-3407, as amended; Provided, That solid wastes in normal farming operations or in the processing or manufacturing of other products in a manner that will not create a public nuisance or adversely affect the public health: Provided further, That this provision shall not prohibit individuals from dumping or depositing solid wastes resulting from their own residential or agricultural activities onto the surface of land owned or leased by them when such wastes do not create a public nuisance or adversely affect the public health (K.S.A. § 65-3409).

5.4 RELATED LEGISLATION

The Kansas Water Pollution Act dealt with the disclosure of information relating to water pollution (Senate Bill No. 510, Session of 1973, Approved April 11, 1973). It was enacted by the Legislature of the State of Kansas that:

> Records, reports, data or other information obtained relative to or from sources or potential sources of discharges of water pollutants

Figure 1. Kansas Water Agencies and Major Functions


Water Quality
Water Rights Administration
Water Planning and Development
Governor
Board of Health
Secretary of Health
Advisory Committee on the Environment
Board of Agriculture
Water Resources Board
Department of Health and Environment
Division of Health
Division of Environment
Division of Water Resources
Chief Engineer
Water Appropriation
Administration of Laws Pertaining to Dams, Levees and Channel Changes
Flood Plain Zoning
Special Studies and Reports

(Senate Bill No. 510, Session of 1973, Approved April 11, 1973). It was enacted by the Legislature of the State of Kansas that:

> Records, reports, data or other information obtained relative to or from sources or potential sources of discharges of water pollutants shall be available to the public except that upon a showing satisfactory to the Department of Health by any person that such records, reports, data or other information would divulge methods or processes entitled to protection as trade secrets, then the Department of Health shall consider such records, reports, data, or other information as confidential: Provided, that nothing in this act shall be construed to make confidential any effluent data, including records, reports, or information and permits, draft permits and permit applications. Any such records, data, or other information considered confidential may be made available to other officers, employees, or authorized representatives of the federal, state, and local government with responsibilities in water pollution control and additionally may be utilized in any proceeding whether civil or criminal (K.S.A. § 65-1709).

5.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

The Kansas State Board of Health promulgated regulations in 1974 with the intent "to comply with State statutes relative to water pollution control discharge permits and to comply with all requirements of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) concerning the NPDES and federal regulations adopted pursuant thereto" (Kansas State Board of Health Regulations 28-16-57 to 63). These regulations required that any person who was discharging pollutants into the waters of the state to file one copy of the appropriate application by December 31, 1974 (K.S.B.H. Regs. 28-16-59). Any person who proposes the commencement of a discharge after these regulations were enacted must file a complete application "1) no less than 180 days in advance of the date on which it is desired to commence the discharge of pollutants or 2) in sufficient time prior to commencement of the discharge of pollutants to insure compliance with the requirements of State or Federal law" (K.S.B.H. Regs. 28-16-59 II).

If the Director deems it advisable to issue a permit, he can attach conditions which include effluent limitations, schedules of compliances, special conditions, and a monitoring program (if appropriate) (K.S.B.H. Regs. 28-16-60 (II)). No permit can be issued if the Regional Administrator of the EPA for Region VII has objected to its issuance (K.S.B.H. Regs. 28-16-62 I, A (3)).

The Kansas State Board of Health has also promulgated regulations dealing with Kansas Permits, Spills, and Grants Regulations and with Kansas Underground Storage Regulations, neither of which deals with agriculture or irrigation return flows.

The only regulations which do pertain to agriculture are the Kansas Agricultural Waste Regulations (K.S.B.H. Regs. 28-18-1 to 4). These regulations require the operator of a confined feeding operation to register with the Kansas State Department of Health (now with the Department of Health and Environment) (K.S.B.H. Regs. 28-18-2).

The applicants must submit the application along with supplemental information regarding the general features of topography, drainage course, and identify the ultimate primary receiving streams (K.S.B.H. Regs. 28-18-2 (b)).

If the Department of Health and Environment finds that a proposed or existing confined feeding operation does not constitute a potential water pollution problem, then water pollution control facilities are not required (K.S.B.H. Regs. 28-18-2 (c)). However, if the operation does constitute a water pollution potential, the operator must provide water pollution control facilities, constructed in accordance with approved plans and specifications (K.S.B.H. Regs. 28-18-2 (d)).

Water pollution control facilities include waste retention lagoons, retention ponds, or waste treatment facilities (K.S.B.H. Regs. 28-18-1 (i)).

Waste retention lagoons or retention ponds mean:

> excavated or diked structures, or natural depressions provided for or used for the purpose of containing or detaining animal wastes consisting of body excrements, feed losses, litter, cooling waters, wash waters, whether separately or collectively, or any other associated materials detrimental to water quality or to public health, or to beneficial uses of the waters of the state. A waste retention structure shall not be construed to be a treatment facility and discharges of waste water therefrom shall not be allowed except as authorized by regulations 28-18-3 to 28-18-4 (K.S.B.H. Regs. 28-18-1 (h)).

Waste treatment facilities means:

> structures and/or devices which stabilize, or otherwise control pollutants so that after discharge of treated wastes, water pollution does not occur and the public health and the beneficial uses of the waters of the state are adequately protected (*Ibid.*).

Water pollution control facilities cannot be placed in use until a permit has been issued (K.S.B.H. Regs. 28-18-2 (e)). These permits are revocable for cause on thirty days' written notice.

The requirements for various facilities include:

> (a) CATTLE: The minimum water pollution control facilities for the confined feeding of cattle shall be retention ponds capable of containing three inches of surface runoff from the feedlot area, waste storage areas, and all other waste contributing areas. Diversion of surface drainage prior to contact with the confined feeding area or manure or sludge storage areas shall be permitted. Waste retained in detention ponds shall be disposed of as soon as practicable to insure adequate retention capacity of future needs.
>
> (b) SWINE: Waste retention lagoons for swine feeding operations may be allowed in lieu of waste treatment facilities. Waste retention lagoons must be capable of retaining all animal excreta, litter, feed losses, cooling waters, wash waters, and any other associated materials and shall additionally be capable of retaining three inches of rainfall runoff from all contributing drainage areas. Diversion of surface

> drainage prior to contact with the confined feeding area or manure or sludge storage areas shall be permitted. Provision must be made for periodic removal of waste material from retention lagoons.
> (c) SHEEP: The minimum water pollution control facilities for the confined feeding of sheep shall be retention ponds capable of containing three inches of surface runoff from the confined feeding area, waste storage areas, and all other waste contributing areas. Diversion of surface drainage prior to contact with the confined feeding area or manure or sludge storage areas shall be disposed of as soon as practicable to insure adequate retention capacity for future reuse (K.S.B.H. Regs. 28-18-3).

Water pollution control facilities must be operated and maintained "so as to prevent water pollution and to protect the public health and the beneficial uses of the waters of the state" (K.S.B.H. Regs. 28-18-4). Wastes removed from retention ponds, waste treatment facilities, or confined feeding areas may be used for irrigation or spread on land surface and mixed with the soil in a manner which will prevent runoff of wastes (Ibid).

5.6 CASE LAW APPLICABLE TO AGRICULTURE

In McDaniel v. City of Cherryvale (91 Kan. 40, 136 P. 899, 1913), the Supreme Court of Kansas held that a cause of action for permanent damage which was caused by the defendant's pollution of a stream accrued when the sewage and impurities were first deposited into the stream. The court also stated that when two or more persons, by their concurrent action, pollute a stream, to the injury of another, they are jointly and severally liable for the wrongdoing.

The Kansas Supreme Court has upheld an award of damages for the loss of livestock caused from the pollution of streams (Phillips v. Empire Oil and Refining Co., 131 Kan. 516, 292 P. 782, 1930; Holden v. Great Lakes Pipe Line Co., 139 Kan. 71, 29 P.2d 1076, 1934; Rusch v. Phillips Petroleum, 163 Kan. 11, 180 P.2d 270, 1947; Gano v. Hall, 188 Kan. 491, 363 P.2d 551, 1961).

In Gardenshire v. Sinclair-Prairie Oil Co. (141 Kan. 865, 44 P.2d 280, 1935), the Supreme Court of Kansas held that a riparian landowner's cause of action for damage to a stream by the discharge of salt water and other deleterious matter from oil wells did not accrue until the landowners were injured by that discharge.

In 1946, the Kansas Supreme Court held that a judgment for permanent damage to realty because of the pollution to a stream by the city did not trigger res judicata as to a subsequent action against a creamery association for damages sustained in the following two years because of injury to livestock and underground water supply (Klassen v. Central Kansas Cooperative Creamery Association, 160 Kan. 697, 165 P.2d 601, 1946).

Atkinson v. Herington Cattle Co. (200 Kan. 298, 436 P.2d 816, 1968) involved an action for damages for the pollution of the plaintiff's dairy farm water supply from the defendant's cattle feeding operation. The Supreme Court of Kansas held that the evidence was sufficient to support the lower court's judgment for actual damages, but was insufficient to support an award for punitive damages. The court indicated that in order to recover punitive damages in a case such as this, the claimant must show malice, vindictiveness, indifference, or gross and wanton conduct.

5.7 INFORMATION SOURCES

Coggins, George Cameron, "Regulation of Air and Water Quality in Kansas: A Critical Look at Legislative Ambiguity and Administrative Discretion," 21 Kansas Law Review, 1, 1972.

Metzler, Dwight F., "Pollution Problems in Kansas," 5 Kansas Law Review, 611, 1957.

APPENDIX A

6. MONTANA

6.1 SUMMARY OF WATER QUALITY LAWS

6.1.1 Background

As far back as 1895, Montana was concerned with water pollution. In that year, the Montana State Legislature enacted a statute which made it a criminal offense to willfully poison any well, spring, or reservoir (R.C.M. § 94-35-255, En. Sec. 631, Pen. C. 1895). This statute still remains in effect and provides that a conviction under this statute is punishable by imprisonment in the state prison for a term of not less than one nor more than ten years.

Six years later, a statute was enacted which prohibited the depositing of coal slack into streams of that water which was used for domestic purposes or for irrigation (R.C.M. § 94-3551, En. Sec. 1, p. 165, L. 1901). A companion statute provided that violation of the above statute resulted in a fine of not less than $200, nor more than $500, for each offense (R.C.M. § 94-3552).

In 1907, legislation was enacted which gave the State Board of Health the power to prohibit pollution from sewage discharges (Acts 1907, p. 477, c. 177 § 8, Rev. Codes § 1566). The Water Pollution Control Act was enacted in 1947 to conserve the waters of the state by maintaining and improving the quality of water. In 1955, a more comprehensive law was enacted to control and protect water for recreation, industry and agriculture. A water pollution control council was established and directed to classify streams and set water quality criteria. Montana became one of the first states to develop enforceable stream classifications (Water Quality Inventory, 1976, p. 18).

In 1971, the Montana State Legislature enacted the Montana Environmental Policy Act (R.C.M. § 69-6501 to 6517, ch. 238, L. 1971). The purpose of the Act was to:

> declare a state policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the state; and to establish an Environmental Quality Council (R.C.M. § 69-6502).

Two years later, water quality criteria were enacted and adopted by the Montana Department of Health and Environmental Sciences (Adopted July 13, 1973, Effective November 5, 1973; Amended July 19, 1974, Effective September 5, 1974. See Environment Reporter, State Water Laws, Vol. II, 831:0501 to :0510). This criteria consisted of water quality standards, water-use classifications, water use descriptions and specific water quality criteria and general water quality criteria.

In 1974, the Montana Pollutant Discharge Elimination System (MPDES) was adopted by the Montana State Department of Health and Environmental Sciences and was approved by the Environmental Protection Agency (EPA) on June 10, 1974 (See State Department of Health and Environmental Sciences Regulation 16-2.14 (10)-S14460; See Environment Reporter, State Water Laws, Vol. II, 831:0581 to :0587).

The basic laws regarding water pollution as amended in 1971 and 1973 provide for a broad, comprehensive, but flexible water quality planning and management program administered by the Water Quality Bureau, Environmental Sciences Division, Department of Health and Environmental Sciences (Mont. S.L. 1971, Ch. 21; Mont. S.L. 1973, Ch. 505; R.C.M. § 69-4801 to 4827, 1975 Supp.). The law sets out a unique public policy as it pertains to irrigation return flows, and employs six important elements to insure the policy will be carried out. They are:

1. water quality standards
2. state-wide monitoring and surveillance
3. waste discharge permit program
4. construction grants and programs to insure treatment facilities are properly operated
5. public participation, and
6. enforcement (Water Quality Inventory, 1976, p. 75).

These features will be discussed in the following sections.

6.1.2 Policy

The law states that it is the public policy of the state of Montana to:

> (a) conserve water by protecting, maintaining and improving the quality and potability of water for public water supplies, wildlife, fish and aquatic life, agriculture, industry, recreation and other beneficial uses;
>
> (b) provide a comprehensive program for the prevention, abatement and control of water pollution (R.C.M. § 69-4801(1)).

The section further states that, "It is not necessary that wastes be treated to a purer condition than the natural condition of the receiving stream as long as the minimum treatment requirements are met." "Natural" refers to conditions or material present from runoff or percolation over which man has no control or from developed land where all reasonable land, soil and water conservation practices have been applied. Conditions resulting from the reasonable operation of dams at the effective date of this Act are "natural" (Ibid., § 2, emphasis added).

Montana's water quality standards were:

> adopted to establish maximum allowable changes in water quality and establish limits for pollutants which affect prescribed beneficial uses of state waters. The department adopts as a rule the policy that best practicable treatment and control of waste, activity and flow is to be provided to maintain dissolved oxygen and overall water quality at the highest possible levels, and . . . dissolved chemical substances, toxic substances . . . turbidities, color, odor and other deleterious substances at the lowest possible levels (Environment Reporter, State Water Laws, Vol. II, 831.0501).

The Montana Environmental Policy Act sets forth the state's policy for the environmental, and even though it does not expressly deal with water quality it does show Montana's concern for its environment:

> The legislative assembly, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the state of Montana, in cooperation with the federal government and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can coexist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Montana.
>
> (a) In order to carry out the policy set forth in this act, it is the continuing responsibility of the state of Montana to use all practicable means, consistent with other essential considerations of state policy, to improve and coordinate state plans, functions, programs, and resources to the end that the state may -
>
> (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
>
> (2) assure for all Montanans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
>
> (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
>
> (4) preserve important historic, cultural, and natural aspects of our unique heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
>
> (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
>
> (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.
>
> (b) The legislative assembly recognizes that each person shall be entitled to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment (Ch. 238, L. 1971, R.C.M. § 69-6503).

Finally, the Montana Water Use Act declares it to be the policy of the state to "provide for the wise utilization, development, and conservation of the waters of the state for the maximum benefit of the people with the least possible degradation of the natural aquatic ecosystems. . . . " (Sec. 89-869, R.C.M. 1947, New M.A.C. Not. No. 36-3-16; order M.C.A. No. 36-3-11; Adopted February 6, 1976, Effective March 7, 1976).

6.1.3 Classification

The Board of Health and Environmental Sciences has established a classification of waters in accordance with present and future beneficial uses (R.C.M. § 69-4808). The Board has classified waters in Montana as either A - closed, A - open - D_1, B-D_1, B-D_2, B-D_3, C-D_1, C-D_2 or E-f.

A-closed waters are those waters used for

> drinking, culinary and food processing purposes which are suitable for use after simple disinfection. Public access and activities such as livestock grazing and timber harvest are controlled by the utility owner under conditions prescribed and orders issued by the department. Only those waters on which access is presently controlled by the utility owner have been classified as A-closed. If other uses are permitted the water must be classified as A-open-D_1.

A-open-D_1 waters are defined as those waters used for:

> drinking, culinary and food processing purposes suitable for use after simple disinfection and removal of naturally present impurities. Water quality is to be maintained suitable for bathing, swimming and recreation; growth and propagation of salmoned fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply. Where the waters are used for swimming or other water-contact sports, analyses are to be made by the utility owner and the Department to determine if a higher degree of treatment is required for public water use.

State waters within the confines of national parks and nationally designated wild, wilderness or primitive areas receive this classification with the exception of those waters which are adjacent to developed areas.

B-D_1 waters are to be maintained in such a quality as is

> suitable for drinking, culinary and food processing purposes after adequate treatment to coagulation, sedimentation, filtration, disinfection and any additional treatment necessary to remove naturally present impurities; bathing, swimming and recreation; growth and propagation of salmoned fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

B-D_2 waters must be maintained in a sufficient quality

> for drinking, culinary and food processing purposes after adequate treatment equal to coagulation, sedimentation, filtration, disinfection and any additional treatment necessary to remove naturally present impurities; bathing, swimming, and recreation; growth and marginal propagation of salmoned fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

B-D_3 waters must be maintained in a suitable quality for drinking, culinary and food processing purposes after adequate treatment equal to coagulation, sedimentation, filtration, disinfection and any additional treatment necessary to remove naturally present impurities; bathing, swimming and recreation; growth and propagation of non-salmoned fishes and associated aquatic life, waterfowl and fur-bearers; and agricultural and industrial water supply.

C-D_1 waters must be maintained in a suitable quality "for bathing, swimming and recreation; growth and propagation of salmoned fishes and associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supply."

C-D_2 waters must be maintained in a quality which is suitable "for bathing, swimming and recreation; growth and marginal propagation of salmoned fishes and associated aquatic life, waterfowl, and fur-bearers; and agricultural and industrial water supply."

E-F waters must be maintained in a quality suitable "for agricultural and industrial water uses other than food processing (M.A.C. 16-2.14(10) - S14480 Water Quality Standards, Montana State Department of Health and Environmental Sciences. See also Environment Reporter, State Water Laws, Vol. II, § 831.0501 to .0510).

6.1.4 Standards

Montana's water quality standards were:

> adopted to establish maximum allowable changes in water quality and establish limits for pollutants which affect prescribed beneficial uses of state waters. The department adopts as a rule the policy that best practicable treatment and control of waste, activity and flow is to be provided to maintain dissolved oxygen and overall water quality at the highest possible levels, and . . . dissolved chemical substances, toxic substances, . . . turbidities, color, odor and other deleterious substances at the lowest possible levels (Environment Reporter, State Water Laws, Vol. II, § 831-0501).

Water quality standards in Montana are based upon the preceding water classifications, water use descriptions, specific water quality criteria, and general water quality criteria. The water quality standards have been revised several times since 1967, the latest being on July 13, 1973.

General water quality criteria applies to all state waters except where specific water quality criteria are more applicable to a specific water-use classification.

"State waters" are defined as: "any body of water, irrigation system or drainage system either surface or underground" (R.C.M. § 69-4802). This definition specifically excludes irrigation waters where such waters are consumed within the irrigation system and are not returned to any other state waters.

General water quality criteria are based upon:

1. The state's policy of nondegradation of existing high water quality.
2. Present and anticipated beneficial uses of the receiving water.
3. The quality and nature of flow of the receiving water.
4. The quantity and quality of the sewage, industrial waste or other waste to be treated.
5. The presence or absence of other sources of pollution on the same watershed (See Environment Reporter, State Water Laws, Vol. II, § 831:0508).

For the design of disposal systems, stream flow dilution requirements are to be based upon a minimum of seven-day consecutive flow which may be:

> expected to occur on the average of once in ten years. When dilution flows are less than the above flow at a point discharge, the discharge is to be governed by the permit conditions developed for the discharge through the waste discharge permit program (M.A.C. 16-2, 14(10) - S14480 Water Quality Standards (6) d. See also Environment Reporter, State Water Laws, Vol. II, § 831:0508(d)).
>
> State surface waters are to be free from substances attributable to municipal, industrial, agricultural practices or other discharges that will:
> (i) Settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines.
> (ii) Create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials.
> (iii) Produce odors, colors or other conditions as to create a nuisance or render undesirable tastes to fish flesh or make fish inedible.
> (iv) Create concentrations or combinations of materials which are toxic or harmful to human, animal, plant, or aquatic life (Id, (e)).
>
> No wastes are to be discharged and no activities conducted such that the wastes or activities, either alone or in combination with other wastes or activities, will violate, or can reasonably be expected to violate, any of the standards . . . (Id, (f)).
>
> No wastes are to be discharged and no activities conducted which, either alone or in combination with other wastes or activities, will cause turbidities to exceed those allowed by specific water quality criteria; provided, short-term activities necessary to accommodate essential dredging, channel or bank alterations, stream diversions or other construction where turbidities in excess of the criteria are unavoidable, may be authorized by the Department under conditions as it may prescribe (Id, (g)).
>
> Existing discharges to state waters will be entitled a mixing zone as determined by the Department (Id, (1)).
>
> Until such time as minimum stream flows are established for dewatered streams, the minimum treatment requirements for

> discharges to dewatered receiving streams are to be no less than the minimum treatment requirements prescribed (Id, (m)).
>
> Pollution resulting from storm drainage, storm sewer discharges, and non-point sources, including irrigation practices, road building, construction, logging practices, overgrazing and other practices, are to be eliminated or minimized as ordered by the Department (Id, (o), emphasis added).
>
> Application of pesticides in or adjacent to state waters is to be in compliance with the labeled direction, and in accordance with provisions of the Montana Pesticides Act (Title 27, Chapter 2, R.C.M. 1947) and the Federal Environmental Pesticides Control Act (Public Law 92-516). Excess pesticides and pesticide containers are not to be disposed of in a manner or in a location where they are likely to pollute state waters (Id, (p)).

6.1.5 Permit System

In 1974, Montana enacted the Montana Pollutant Discharge Elimination System (MPDES) in order to implement one common system for issuing permits for point sources discharging pollutants into state waters pursuant to Section 69-4801 et. seq. R.C.M. (1947) and Section 402(b) of the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500 and to meet the requirements of the National Pollutant Discharge Elimination System program (M.A.C. § 16-2.14(10)-S14460, Jan. 18, 1974). Section 402(b) provides for the transfer of jurisdiction of the NPDES in Montana from the United States Environmental Protection Agency to the state of Montana. On June 10, 1974, the Environmental Protection Agency granted Montana the authority to issue NPDES permits (See Environment Reporter, Current Developments, May 1, 1974 to April 30, 1975, p. 266). Permits issued under prior rules of Montana Administrative Code (M.A.C.) 16-2.14(10)-S14460 and M.A.C. 16-2.14(10)-S14530 will remain in effect until a permit is issued under this rule.

The owner or operator of any point source which discharges pollutants into state waters must comply with the following:

(i) Have filed a complete Refuse Act permit application with the U.S. Army Corps of Engineers which satisfies the filing requirements for NPDES; or
(ii) Have filed a complete NPDES permit application with EPA; or
(iii) File an appropriate MPDES permit application within 60 days following the effective date of this rule (March 8, 1974, 16-2.14(10)-S14460, 4(a)).

MPDES requirements are applicable to those discharges of irrigation return flow under NPDES requirements (16-2.14(10)-S14460, 4(d), emphasis added; See the Federal Register, July 5, 1973, Vol. 38, No. 128, Part III).

When the Department receives a completed MPDES permit application, it will make a tentative determination based upon effluent standards, limitations, standards of performance for new sources of pollutants, toxic effluent standards, prohibitions, pretreatment standards and water quality standards.

The Department will then either give written notice to the applicant of its decision to deny the permit or if their decision is to issue the permit they will prepare an MPDES draft permit (Id, § 5(b)). The draft permit must contain proposed effluent standards, schedules of compliance and a brief description of any other proposed special conditions which will have a significant impact upon the discharge described in the permit application. Appendix 6-A contains the conditions and terms of the MPDES permits as set out in the Administrative Code.

The Department must give public notice of every completed MPDES permit application (Id, 5(c)). If sufficient public interest is expressed to the Department, it must then hold a public hearing (Id, 5(f)). The Department will then make a final determination on issuance or denial of the permit.

Before the enactment of the MPDES program, a permit was required to "construct, modify, or operate a disposal system which discharges to any state waters; or construct or use any outlet for the discharge of sewage, industrial wastes, or other wastes to any state waters; or discharge sewage, industrial wastes, or other wastes into any state waters . . ." (R.C.M. § 69-4806).

Application for a discharge permit must be submitted to the Department of Health and Environmental Sciences (R.C.M. § 69-4809). If the Department denies an application for a permit or modifies a permit, it must give written notice of its action. The applicant can then request a hearing before the Board of Health and Environmental Sciences (R.C.M. § 69-4807.1). After such a hearing the Board will affirm, modify, or reverse the Department's decision.

Modification of a permit is effective 30 days after the holder receives the notice unless the Department specifies a later date. If the holder has requested a hearing, modification is not effective until twenty days after receipt of notice of the Board's action.

If a permit has been suspended or revoked by the Department, the Department can specify that the suspension or revocation is effective immediately (R.C.M. § 69-4807(2)). This is especially true if the Department has made a finding that the violation is likely to continue and will cause pollution which will result in harmful effects. The holder can then petition to the Board for a hearing on this matter.

6.1.6 Sanctions and Enforcement Measures

Montana water laws make it unlawful to:

1. cause pollution of any state waters or to place or cause to be placed any wastes in a location where they are likely to cause pollution of any state waters;
2. carry on any of the following activities without a current permit from the Department:
   (a) construct, modify, or operate a disposal system which discharges to any state waters;
   (b) construct or use any outlet for the discharge of sewage, industrial wastes, or other wastes to any state waters; or
   (c) discharge sewage, industrial wastes, or other wastes into any state waters; or
3. violate any limitation imposed by a current permit (R.C.M. § 69-4806).

Pollution is defined in Montana statutes as:

> contamination, or other alteration of the physical, chemical, or biological properties of any state waters, which exceeds that permitted by Montana water quality standards, including, but not limited to, standards relating to change in temperature, taste, color, turbidity, or odor; or discharge of any liquid, gaseous, solid, radioactive, or other substance into any state water which will or is likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife. A discharge which is authorized under the pollution discharge permit rules of the board is not "pollution" under this chapter (R.C.M. § 69-4802(5)).

Pollutant is defined by MPDES as:

> dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal and agricultural wastes discharged into water. The terms "sewage," "industrial waste," and "other wastes" as defined in Section 69-4802, R.C.M. 1947 shall be interpreted as having the same meaning as pollutant.

The Department has the power to modify, suspend, and revoke a permit (R.C.M. § 69-4807.1, See also Environment Reporter, State Water Laws, Vol. II, 831.0581 to .0587). If the Department denies or modifies a permit, it must send notice to the applicant and hold a hearing if the applicant desires to do so. However, if the Department suspends or revokes a permit it may do so before a hearing, provided that the Department has made a finding that the violation is likely to continue and will cause harmful effects. The holder then has a right to petition for a hearing.

If the Department has reason to believe that a violation of the pollution statutes or a rule has occurred it may have written notice served on the alleged violator (R.C.M. § 69-4820). The Department may then require the alleged violator to appear before the Board for a public hearing and to answer the charges made against him. The Board may specify the date on which the violation will cease and can prescribe any necessary timetables. In the alternative, the Board may direct the Department to initiate appropriate action for the recovery of a penalty.

Violation of a water pollution law, rule, permit, effluent standard, or order subjects the violator to a civil penalty not to exceed $10,000 for each day the violation continues (R.C.M. § 69-4823).

Any person who willfully or negligently violates sec. 69-4806 R.C.M. 1947, or any pretreatment standard is guilty of an offense and is subject to a fine not to exceed $25,000 per day of violation, or by imprisonment for not more than one year, or both. Subsequent convictions subject the violator to a fine of not more than $50,000 per day per violation and/or imprisonment of not more than two years. Finally, any action under the above statute does not bar the use of an injunction or other appropriate remedy.

Any person who knowingly makes a false representation or certification in any application, record, report, plan or other document which is filed or required under water pollution statutes, or who falsifies or tampers with or knowingly renders inaccurate a monitoring device, is subject to a fine of not more than $10,000 or by imprisonment for not more than six months, or both.

Furthermore, the violator may be assessed for the costs of investigation and any expense incurred by the state in removing, correcting, or terminating any of the adverse effects upon water quality resulting from the unauthorized discharge of pollutants.

The Department also has the power to issue an order to stop a violation so that substantial injury will be avoided if a person is committing or is about to commit an act which will cause substantial pollution (R.C.M. § 69-4824). Upon issuance of such an emergency order, a hearing date will be established by the Department and after such a hearing the Board will either affirm, modify or set aside the Department's emergency order. The Department may also institute an action in district court to enjoin the discharge of pollutants which is endangering the health, welfare or livelihood of a person (R.C.M. § 69-4824.1 and 69-4825).

> In addition to all other remedies created by this Act, the Department is authorized to take appropriate enforcement action on its own initiative to:
> (a) prevent, abate, and control the pollution of state waters;
> (b) prevent, abate, and control any violation of a condition or limitation imposed by a permit issued under section 69-4806, R.C.M. 1947;
> (c) prevent, abate, and control any violations of regulations relating to pretreatment standards (R.C.M. § 69-4802.1).

The above statute also permits the Department to issue compliance orders in the event a violation has occurred of any condition, limitation, standard or other requirement. The order must identify the violation and set the time for compliance.

6.2 ADMINISTRATION OF WATER QUALITY LAWS

6.2.1 Water Pollution Control

The Board of Health and Environmental Sciences is the policy formulation body charged with the following duties:

> (1) The Board shall:
> (a) Establish and modify the classification of all waters in accordance with their present and future most beneficial uses.
> (b) Formulate standards of water purity and classification of water according to its most beneficial uses, giving consideration to the economics of waste treatment and prevention.
> (c) Review from time to time, at intervals not more than three (3) years, established classifications of waters and standards of water purity and classification, and
> (i) The classifications, standards, and rules which have been adopted by the state Water Pollution Control Council under section 69-4813 are, without necessity of a hearing, initially adopted by the Board.

(ii) In revising classifications or standards or in adopting new classifications or standards the Board may not so formulate standards of water purity or classify any state water as to lower any water quality standard applicable to any state water below the level applicable under the classifications and standards adopted by the state Water Pollution Control Council under section 59-4813.
(iii) The Board shall require that any state waters, whose existing quality is higher than the established water quality standards, be maintained at that high quality unless it has been affirmatively demonstrated to the Board that a change is justifiable as a result of necessary economic or social development and will not preclude present and anticipated use of these waters; and
(iv) The Board shall require any industrial, public, or private project or development, which would constitute a new source of pollution or an increased source of pollution to high quality waters, referred to in subsection (1)(c) (iii), to provide the degree of waste treatment necessary to maintain that existing high water quality.
(d) Advise, consult, and cooperate with other states, other state and federal agencies, affected groups, political subdivisions, and industries in the formulation of a comprehensive plan to prevent and control pollution.
(e) Adopt rules governing application for permits to discharge sewage, industrial wastes, or other wastes into state waters including rules requiring the filing of plans and specifications relating to the construction, modification, or operation of disposal systems.
(f) Adopt rules governing the issuance, denial, modification, or revocation of permits, and:
(i) The rules governing the issuance or continuance of a permit only if the Department finds that operation consistent with the limitations of the permit will not result in pollution of any state waters, except that:
(ii) The rules may allow the issuance of a temporary permit under which pollution may result, if the Department ensures that such permit contains a compliance schedule designed to meet all applicable effluent standards and water quality standards in the shortest reasonable period of time.
(iii) The rules shall provide that the Department may revoke a permit if the Department finds that the holder of the permit has violated its terms, unless the Department also finds that the violation was accidental and unforeseeable and that the holder of the permit corrected the condition resulting in the violation as soon as was reasonably possible; and
(g) Hold hearings necessary for the proper administration of this chapter or, in the case of permit issuance hearings, delegate this function to the Department.
(h) Adopt rules for the administration of this chapter.
(i) Adopt pretreatment standards for waste water discharged into a municipal disposal system, adopt effluent standards as defined in section 69-4802(18), adopt toxic effluent standards of performance for new point source discharges.
(2) The Board may:
(a) accept loans and grants from the federal government and other sources to carry out the provisions of this chapter; and
(b) establish minimum requirements for the treatment of wastes (R.C.M. § 69-4808.2).

Before the Board classifies streams or establishes standards, they must hold a public hearing (R.C.M. § 69-4814). Notice of this hearing must be published at least once a week for three consecutive weeks in a daily newspaper of general circulation in the area affected. Notice must also be mailed directly to persons that the Board believes may be affected by their proposed actions. At this hearing, all interested persons must have an opportunity to submit data, views, or arguments.

The Department of Health and Environmental Sciences is the chief agency responsible for administering Montana's water pollution laws (R.C.M. § 69-4805). The Department is authorized to use its personnel and the personnel of local departments of health in carrying out its duties.

The Department carries out the decisions of the Board and the duties of the Department are specifically defined in R.C.M. § 69-4809.1:

> The Department is commanded by the above statute to:
> (a) Issue, suspend, revoke, modify, or deny permits to discharge sewage, industrial wastes, or other wastes to state water, consistently with rules made by the Board;
> (b) Examine plans and other information needed to determine whether a permit should be issued or suggest changes in plans as a condition to the issuance of a permit;
> (c) Clearly specify in any permit limitations imposed as to the volume, strength, and other significant characteristics of the waste to be discharged;
> (d) Collect and furnish information relating to the prevention and control of water pollution;
> (e) Conduct or encourage necessary research and demonstrations concerning water pollution;
> (f) Issue orders to any person to clean up any material which he or his employee, agent, or subcontractor has accidentally or purposely dumped, spilled, or otherwise deposited in or near state waters and which may pollute them.
> (g) Take such actions as are authorized or required under section 69-4802.1 to ensure that the terms and conditions of issued permits are complied with and to ensure that violations of this chapter are appropriately prosecuted.

In order to effectively carry out these duties, the Department is given the power to require the owner or operator of any point source to:

> (1) establish and maintain records;
> (2) make reports;
> (3) install, use and maintain monitoring equipment or methods, including biological

monitoring techniques;

(4) sample effluents using specified monitoring methods at designated locations and intervals; and

(5) provide other information as may be reasonably required by the Department (R.C.M. § 69-4809.2(1)).

Furthermore, the authorized representative of the Department may at reasonable times enter upon any public or private property to:

(a) investigate conditions relating to pollution of state waters or violations of permit conditions;

(b) have access to and copy any records required under this Act;

(c) inspect any monitoring equipment or method required under subsection (1)(c); and

(d) sample any effluents which the owner or operator of such source is required to sample under that subsection (R.C.M. § 69-4809.2(2)).

The Water Pollution Control Advisory Council (R.C.M. §82A-607) acts as an advisor to the Department on matters relating to water pollution (R.C.M. § 69-4812). The Director of the Department designates a member of the Department's staff to serve as Secretary to the Council. The Council is given three days to comment on any proposed action of the Board (R.C.M. § 69-4814).

The Environmental Quality Council consists of four members from the state senate, four members from the house of representatives and the governor or his designated representative (R.C.M. § 69-6508). This Council appoints an Executive Director whose duty it is:

(a) to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in section 3 (69-6503) of this act, and to compile and submit to the governor and the legislative assembly studies relating to such conditions and trends;

(b) to review and appraise the various programs and activities of the state agencies in the light of the policy set forth in section 3 R.C.M. 69-6503 of this act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the governor and the legislative assembly with respect thereto;

(c) to develop and recommend to the governor and the legislative assembly, state policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the state;

(d) to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

(e) to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

(f) to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the legislative assembly requests;

(g) to analyze legislative proposals in clearly environmental areas and in other fields where legislation might have environmental consequences, and assist in preparation of reports for use by legislative committees, administrative agencies, and the public;

(h) to consult with, and assist legislators who are preparing environmental legislation, to clarify any deficiencies or potential conflicts with an overall ecologic plan.

(i) to review and evaluate operating programs in the environmental field in the several agencies to identify actual or potential conflicts, both among such activities, and with a general ecologic perspective, and to suggest legislation to remedy such situations;

(j) to transmit to the governor and the legislative assembly annually, beginning July 1, 1972, an environmental quality report concerning the state of the environment which shall contain:

(1) the status and condition of the major natural, manmade, or altered environmental classes of the state, including, but not limited to, the air, the aquatic, including surface and ground water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban, and rural environment;

(2) the adequacy of available natural resources for fulfilling human and economic requirements of the state in the light of expected population pressures;

(3) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the state in the light of expected population pressures;

(4) a review of the programs and activities (including regulatory activities) of the state and local governments, and nongovernmental entities or individuals, with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and

(5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation (R.C.M. § 69-6514).

Figure 1 is a detailed organization chart of the water quality agencies.

6.2.2 Additional Agency Involvement

The Department of Natural Resources has statutory duties to determine how, when, and where Montana's waters are being utilized and to create and enforce a permit system for water rights. Further, the Department must ascertain practices of existing water rights, adjudicate streams, enforce rules and regulations adopted by the Board of Health and Environmental Sciences and assist and coordinate activities with state, local and Federal agencies. Most importantly,

Figure 1. Organizational Chart of Montana. Department of Health & Environmental Science

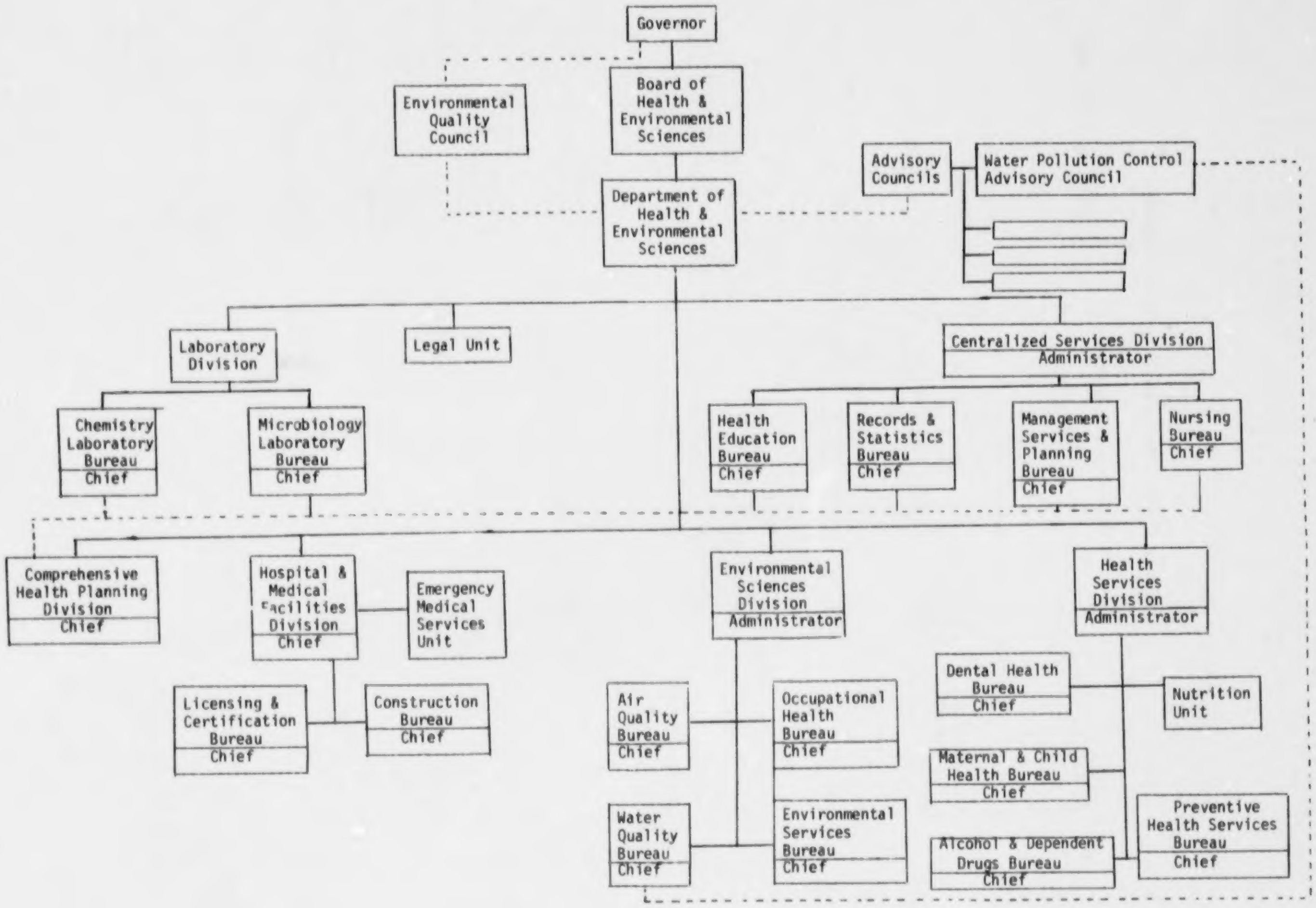
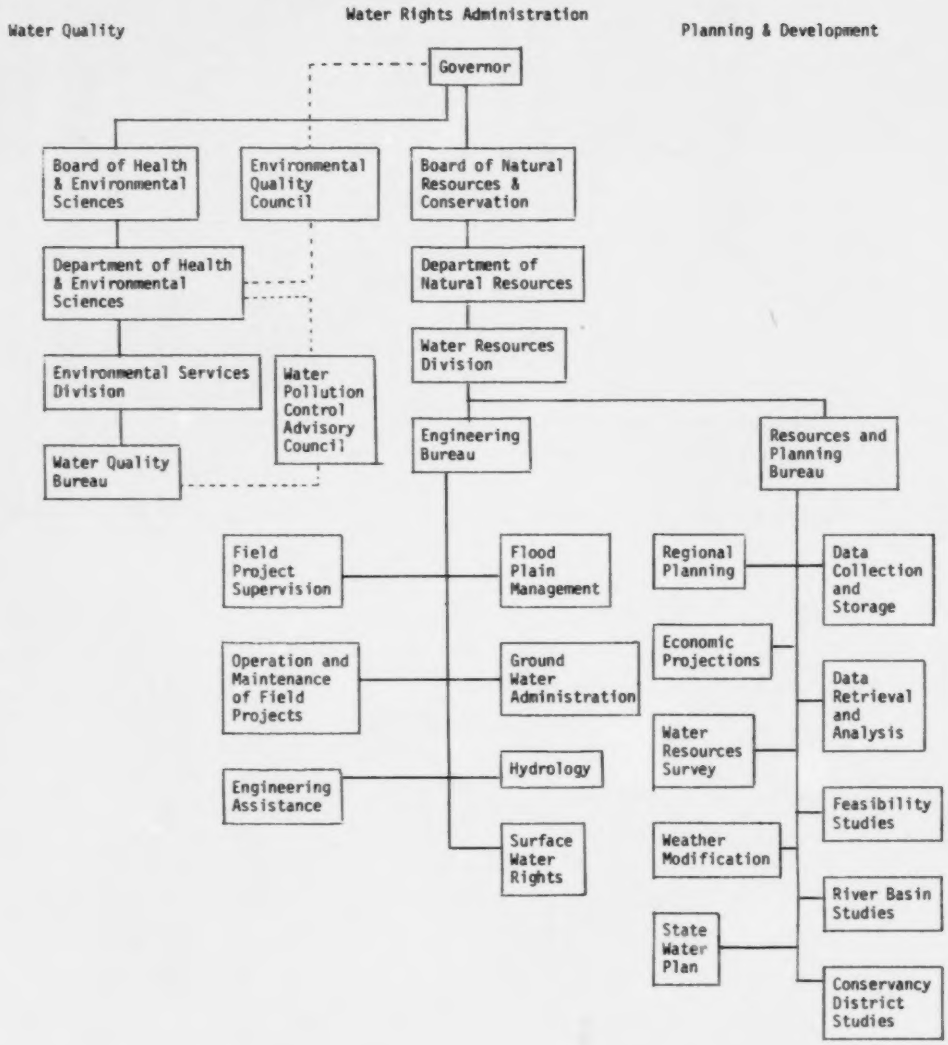

Governor
Board of Health & Environmental Sciences
Environmental Quality Council
Department of Health & Environmental Sciences
Advisory Councils
Water Pollution Control Advisory Council
Laboratory Division
Legal Unit
Centralized Services Division Administrator
Chemistry Laboratory Bureau Chief
Microbiology Laboratory Bureau Chief
Health Education Bureau Chief
Records & Statistics Bureau Chief
Management Services & Planning Bureau Chief
Nursing Bureau Chief
Comprehensive Health Planning Division Chief
Hospital & Medical Facilities Division Chief
Emergency Medical Services Unit
Licensing & Certification Bureau Chief
Construction Bureau Chief
Environmental Sciences Division Administrator
Air Quality Bureau Chief
Occupational Health Bureau Chief
Water Quality Bureau Chief
Environmental Services Bureau Chief
Health Services Division Administrator
Dental Health Bureau Chief
Nutrition Unit
Maternal & Child Health Bureau Chief
Alcohol & Dependent Drugs Bureau Chief
Preventive Health Services Bureau Chief

Figure 2. Montana Water Agencies & Major Functions


Water Quality
Water Rights Administration
Planning & Development
Governor
Board of Health & Environmental Sciences
Environmental Quality Council
Board of Natural Resources & Conservation
Department of Health & Environmental Sciences
Department of Natural Resources
Water Resources Division
Environmental Services Division
Water Pollution Control Advisory Council
Water Quality Bureau
Engineering Bureau
Resources and Planning Bureau
Field Project Supervision
Flood Plain Management
Operation and Maintenance of Field Projects
Ground Water Administration
Engineering Assistance
Hydrology
Surface Water Rights
Regional Planning
Data Collection and Storage
Economic Projections
Data Retrieval and Analysis
Water Resources Survey
Feasibility Studies
Weather Modification
River Basin Studies
State Water Plan
Conservancy District Studies

the Department has established a centralized record system for existing water rights (R.C.M. § 89-870). For a detailed discussion, see Appendix B, Report 6, "Montana Water Laws," Western Water Laws & Irrigation Return Flow Quarterly, EPA, 1977.

Figure 2 contains the organization by function of Montana's state agencies directly in charge of water quality and quantity control.

6.3 SPECIAL LEGISLATION

The Public Water Supply Act (R.C.M. § 69-4901 to 4908) states that it is the policy of the state to protect, maintain, and improve the quality and potability of water for public water supplies and domestic uses (R.C.M. § 69-4901). Pollution is defined by this Act as the alteration of any properties of state waters which is detrimental to their most beneficial use (R.C.M. § 69-4902).

This Act gives the State Board of Health general supervision over all state waters which are directly or indirectly used for public water supply, domestic purposes, or as a source of ice (R.C.M. § 69-4903). The Board is also given the power to adopt rules, standards and may issue orders to prevent pollution and protect the quality of water.

The State Department of Health must make an investigation of alleged pollution of a water supply upon receipt of a complaint (R.C.M. § 69-4904). The Department may then prohibit the continuance of the pollution by ordering the removal of its cause.

Under this Act a person must not:

(1) discharge polluting matter of any kind that will pollute the quality of state waters used by a person for domestic use or as a source of supply by a city, town, public institution, water, or ice company;
(2) discharge human excrement, sewage, drainage, refuse, or polluting matter into any state waters or on the banks of any state waters or into any abandoned or operating water well unless the sewage, drainage, refuse, or polluting water is purified to render it harmless as prescribed by the state board;
(3) build or operate any railroad, logging road, logging camp, electric or manufacturing plant of any kind on any watershed of a public water supply system, unless:
(a) the water supply is protected from pollution by sanitary precautions prescribed by the state board; and
(b) a permit has been issued by the Department after approval of detailed plans and specifications for sanitary precautions;
(4) construct, alter, or extend any system of water supply, water distribution, sewer, drainage, waste water, or sewage disposal without first submitting necessary maps and plans and specifications to the Department for their advice and approval (R.C.M. § 69-4905).

Violation of this Act is punishable by a fine of not more than $1,000, imprisonment for not more than one year, or both (R.C.M. § 69-4908).

The Sanitation in Subdivisions Act (R.C.M. § 69-5001 to 5009, 1975 Supp.) was enacted to extend present laws controlling water supply, sewage disposal and solid waste disposal to include individual wells affected by adjoining sewage disposal and individual sewage systems to protect the quality and potability of water supplies and domestic uses and to protect the quality of water for other beneficial uses, including uses related to agriculture, industry, recreation and wildlife (R.C.M. § 69-5001).

The Department of Health and Environmental Sciences administers this Act and approves plans for water facilities in subdivisions (R.C.M. § 69-5003). Unless the Department indicates that the subdivision is not subject to any sanitary restrictions, a person may not file a subdivision plat, make disposition of any lot within a subdivision, erect any building or shelter which requires facilities for the supply of water or disposal of sewage or solid waste.

If a person is denied approval of subdivision plans, he may request a hearing before the Board of Health and Environmental Sciences (R.C.M. § 69-5006). If a written complaint alleging violation is made to the Department and a violation is found to exist, the Department will issue notice and hold a hearing pursuant to the Montana Administrative Procedure Act (R.C.M. § 82-4201 to 82-4225). The Department may also initiate appropriate action for injunction or for recovery of penalty as provided in the Act (R.C.M. § 69-5007). Violation of any provision of the Act or any rule or order issued under this Act is guilty of an offense and subject to a fine not to exceed $1,000 (R.C.M. § 69-5008(1)). Action taken under this section (1) will not bar enforcement of the Montana Administrative Procedure Act or rules or orders issued under it by injunction or other appropriate remedy (R.C.M. § 69-5008).

6.4 RELATED LEGISLATION

The Montana Economic Land Development Act (R.C.M. § 84-7501 to 7526, 1975 Supp.) was enacted to enable local control and decisions to be foremost in determining the growth patterns of the state (R.C.M. § 84-7502). The Act was designed to protect prime agricultural land and guide industrial and commercial development among other things (R.C.M. § 84-7503).

A complete inventory of the land and its usage must be included in the governing bodies' plan and include:

(i) land types, based on federal standards;
(ii) the floodplain of all streams and rivers;
(iii) current vegetation patterns, i.e., cropland, irrigated land, rangeland, nonproductive land;
(iv) developed land; and
(v) all federal, state, or Indian lands.
Decisions shall be coordinated with the Department of Revenue (Id, § 84-7505).

While this Act does not deal with water pollution, it is closely related to the State's policy of conserving its resources and preserving its agricultural lands.

6.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

6.5.1 Agriculture Generally

Montana's Pollutant Discharge Elimination System requires that the owner of any point source which discharges pollutants into state waters must obtain an MPDES permit (Regulation 16-2.14(10) - S14460, (4)).

The regulations define a point source as,

> any discernible, confined or discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, or vessel or other floating craft, from which pollutants are or may be discharged. In this rule, the term "point source" also includes animal confinement facilities.

Montana's water quality criteria were adopted to establish maximum allowable changes in water quality and establish limits for pollutants which affect prescribed beneficial uses of state waters (Montana Water Quality Criteria, Environment Reporter, State Water Laws, Vol. II, § 31:0501).

State waters means, "any body of water, irrigation system or drainage system, either surface or underground. This definition specifically excludes irrigation waters which are used up within the irrigation system and not returned to any other state waters" (Environment Reporter, State Water Laws, Vol. II, § 831:0501(3)).

Montana has also promulgated regulations dealing with water pollution from livestock feeding (Montana Regulation on Water Pollution from Livestock Feeding, State of Montana Board of Health and Environmental Sciences Regulation for the Control of Water and Air Pollution from Confined Animal Feeding; Effective June 24, 1972). These regulations were enacted to implement the Water Pollution Control Act and the Clean Air Act of Montana as they pertain to confined livestock feeding operations (Id, I).

These regulations define water pollution as,

> such contamination, or other alteration of the physical, chemical, or biological properties, of any state waters, as exceeds that permitted by Montana water quality standards, including but not limited to standards relating to change in temperature, taste, color, turbidity, or odor, or such discharge of any liquid, gaseous, solid, radioactive, or other substances into any state water as will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to public health, recreation, safety, or welfare, or to livestock, wild animals, birds, fish or other wildlife, provided, however, that any discharge which is permitted by Montana water quality standards is not "pollution" for the purposes of this regulation. Complete definition of "pollution" requires references to the classification of waters and the water quality criteria which have been adopted by the Montana Water Pollution Control Council under Title 69, Chapter 48 as amended through 1969 and which may be adopted by the Board of Health and Environmental Sciences under that title and chapter as amended in 1971 (Id, § III, B).

A livestock waste control facility permit must be obtained if a new or existing confined livestock feeding operation discharges drainage water or manure into state waters (Id, § IV). This permit is good for five years and if an operator wants to renew his permit he must notify the Department of Health and Environmental Sciences (Id, § IV, J). The permit will be renewed if the operator meets all the conditions of the original permit and the standards for air or water have not changed (Ibid.).

6.5.2 Irrigation Return Flow

Montana has taken a unique but realistic approach toward the irrigation return flow quality control issue. Beginning with the declaration of policy, it is apparent the state recognizes the problem but is only willing to attack it when the capability and basis for doing so exists. In place of paraphrasing a well-written summary of the law and regulations that pertain to irrigation return flow, the following quotation is provided:

> Pollution from non-point sources is currently Montana's greatest water quality problem.
>
> For sustained production of Montana's 93+ million acres, man must adapt his enterprises to the natural environment. To do so he has to till, plant, cultivate and harvest his crops on land suitable for cultivation. He must also utilize land for grazing and timber production. Improper utilization of land not only decreases production but also increases possibility of water quality degradation. This degradation results from sediment discharges, salinity increases, temperature increases, flow changes and discharge of toxic agents such as pesticides, herbicides and mine wastes. Montana water pollution laws and regulations recognize the need to utilize our resources. They include:
>
> Section 69-4801 (Public Policy of the State) states in part:
>
> (2) It is not necessary that wastes be treated to a purer condition than the natural condition of the receiving stream. "Natural" refers to conditions or material present from runoff or percolation over which man has no control or from developed land where all reasonable land, soil and water conservation practices have been applied. Conditions resulting from dams of the effective date of this act are "natural."
>
> Section 69-4802 (Definitions) states in part:
>
> (5) "Pollution" means such contamination or other alteration of physical, chemical, or biological properties of any state waters as exceeds that permitted by Montana Water Quality Standards, including but not limited to standards relating to change in temperature, taste, color, turbidity or odor, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any state waters as will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to public health, recreation, safety or welfare or to livestock, wild animals, birds, fish or other wildlife, provided, however, that any discharge permitted by Montana Water Quality Standards is not pollution for the purposes of this chapter;
>
> Section 69-4806 (Pollution Unlawful - Permits) states in part:
>
> It is unlawful to:
>
> (1) cause pollution as defined in 69-4802 (5), R.C.M., 1947, of any state waters or to place or cause to be placed any wastes

in a location where they are likely to cause pollution of any state waters;

Montana Administrative Code 16-2.14(10)-S14480, Water Quality Standards:

General Water Quality Criteria:

(o) Pollution resulting from storm drainage from sewer discharges and non-point sources including irrigation practices, road building construction, logging practices, overgrazing, and other practices are to be eliminated or minimized as ordered by the department.

The key point in these laws and regulations is the definition of natural. This definition requires the Water Quality Bureau to have a defensible definition of all reasonable conservation practices and sufficient manpower to determine if in fact reasonable conservation practices are being used. The Water Quality Bureau is attempting to develop such definitions.

Due to the magnitude of the non-point problem in Montana and the lack of financial resources, minimal effort has been devoted to the problem. However, the emphasis of the Water Quality Bureau is shifting to non-point problems, and we are attempting to assess the nature and extent of our non-point pollution problem and develop control programs and evaluate costs and benefits for such a program (Water Quality in Montana, 1976, p. 1 & 3).

6.6 CASE LAW APPLICABLE TO AGRICULTURE

In Alder Gulch Consolidated Mining Co. v. Hayes (6 Mont. 31, 9 Pac. 581, 1886), the plaintiff, Alder Gulch Consolidated Mining Co., was the owner of a placer mine. The lower court had prohibited the defendant from diverting waters so as to carry it past the plaintiffs' mining ground, thereby depriving them of the use of that water.

This court affirmed the lower court's decision and held that the downstream mining claimant was entitled to his appropriation, subject to upstream senior appropriations and subject only to the reasonable diminution and deterioration by the upstream users.

Fitzpatrick v. Montgomery (20 Mont. 181, 50 Pac. 416, 1897) was a case which involved the owner (plaintiff) of real estate known as "Buffalo Creek" (agricultural land) and a defendant who was engaged in placer mining on the creek above the premises of the plaintiff. The defendant operated and worked the mine and permitted tailings, rocks and debris to run down the wash and deposit upon the land of the plaintiff. This allegedly destroyed it and made it unfit for agriculture. The case was tried by jury and it found in favor of the plaintiff for $150. The defendant appealed.

In affirming the lower court decision, the Supreme Court of Montana held that in placer mining the operator had no right to deposit tailing, etc., in a running stream to such an extent as to cause his neighbor's land to be flooded with them and thereby to substantially impair its usefulness. If this was done, he was liable in damages regardless of question of negligence, whether his mine could be operated successfully without this result, or of priority of appropriation of the waters of the stream.

Eight years later, in Watson v. Colusa-Parrot Mining and Smelting Co. (31 Mont. 513, 79 Pac. 14, 1905), the plaintiff, J. W. Watson, claimed to be the owner of certain agricultural lands situated on Deer Lodge River below the defendant's concentrating, smelting and reduction plant, and alleged that the defendant had polluted the water of Silver Bow Creek, a tributary of Deer Lodge River, by the operation of its plant, to the extent that the waters were unfit for irrigation or domestic use. The plaintiff also alleged that the refuse and deleterious substances which were deposited in the stream by the defendant had accumulated on his land and injured his crops and caused the soil to be unproductive and sterile and permanently injured it. The lower court held the defendant jointly and severally liable.

In partly reversing the lower court, the Supreme Court of Montana held that where a nuisance arose from individual acts of different mining and reduction companies, which have discharged deleterious and poison matter into the waters of a creek, providing the injury was not a joint one, each company was liable to the person injured for the damage caused by its own wrongful acts and not for that caused by the acts of others, regardless of the difficulty of determining what part of the damage was occasioned by the acts of each.

The court held that the measure of damages for permanent injury to the land, resulting from the poisoning of the waters of a stream, was the difference between the value of the land prior to the injury and its value after the injury.

The court also stated that in order to permit a recovery for injury to crops and for permanent injury to the land on which the crops were raised, it had to be distinctly alleged and proven when the permanent injury to the land took place, how much of the land was permanently injured, and the annual injury to crops prior to that date.

The court further held that where a permanent and total injury to land for agricultural purposes did not immediately result from the perpetuation of a nuisance, but several years elapsed before the injury was completed, the landowners were entitled to damages for the yearly injury to their crops, caused by the continuing nuisance until the completion of the total and permanent injury, but no damages could be allowed for injury to crops after that time.

In Chessman v. Hale (31 Mont. 577, 79 Pac. 254, 1905), the complaint alleged that the plaintiff, William A. Chessman, was the owner of certain lands, water ditches and flumes and that he had a right to the use of certain waters conducted to his lands through said ditches and flumes. It also alleged that the defendant conducted placer mining operations and negligently polluted and fouled the waters by depositing large quantities of debris, sand, gravel and tailings in the plaintiff's ditches and flumes and on plaintiff's land. The plaintiff sought damages and an injunction.

The defendant claimed that by being the user for 23 years he had acquired by prescription, the easement and right of flowage of the waters said to be polluted by tailings in addition to the right acquired by contract.

The Supreme Court of Montana, in reversing the lower court's decision, held that an upper riparian proprietor who had appropriated water and, in a contract to deliver it to a lower proprietor at a certain place, had reserved the right to use the water for placer mining purposes, acquired no title to the water or any right to pollute the water to any extent greater than that permitted by law. It also held that the upper riparian proprietor had a right to a reasonable use of the water for the purposes specified, although such use resulted in fouling it to some extent, but he could not cover the lower proprietor's land with mining debris, so as to render it valueless. This issue of water constitutes a nuisance. A nuisance was defined by the court as anything injurious to health or which interferes with comfortable enjoyment of life or property or unlawfully obstructing the customary use of a river.

The case of Miles City v. Board of Health of State of Montana (39 Mont. 405, 102 Pac. 696, 1909) involved an action by the city of Miles City against the Board of Health of the State of Montana. The facts which brought about this case began in 1897 when the city of Miles City installed a sewer system for the purpose of carrying off the sewage of the city. The outlet of the main sewer was in a slough. The slough became so obstructed that only during high water seasons was there sufficient water flowing through it to carry off the sewage. Therefore, the sewage would collect in the slough near the outlet of the sewer and was a menace to the health of the people living near the outlet. The State Board of Health prohibited the discharge from this system because it would have tended to pollute the waters of the Yellowstone River. The district court annulled the Board's order and it appealed. In reversing the lower court, the Supreme Court of Montana held that a city could not acquire prescriptive rights to discharge sewage. The state could regulate a lawful right even if it destroyed a prescriptive right under its police powers.

In Nelson v. C. and C. Plywood Corporation (154 Mont. 414, 465 Pac. 2d 314, 1970) the plaintiff, John A. Nelson, alleged that his well was polluted by the dumping of glue waste by the defendant which resulted in obnoxious taste, color and smell. The District Court entered a judgment for the plaintiff. The defendant appealed and the Supreme Court of Montana held that the plaintiff was limited to recovery for two years before the filing date of the complaint. It was therefore modified as to damages and then affirmed. The dumping of the glue waste constituted a continuing temporary nuisance.

6.7 INFORMATION SOURCES

Clark, Mark A. and Harper, Bruce P., "Water, A Problem in Montana," 32 Montana Law Review, 81, 1971.

Clark, R. E., ed., Water and Water Rights, Vol. 3, 1967.

________, Water Quality Inventory and Management Plan: Musselshell River Basin, Water Quality Bureau, Environmental Sciences Division, Department of Health and Environmental Sciences, Helena, Montana, May 1976.

________, Water Quality in Montana, § 305(b) Report, Water Quality Bureau, Environmental Health Services, Department of Health and Environmental Sciences, Helena, Montana, May, 1976.

APPENDIX 6-A

The following was extracted from 16-2.14(10)-S14460, ps. 8-10.

(7) Conditions and terms of MPDES permits. All issued MPDES permits shall contain special conditions which will assure compliance with the requirements discussed in subsections (5)(a)(i) through (5)(a)(viii).

(a) General conditions. All issued MPDES permits shall contain general conditions consisting of, but not limited to, the following terms:

(i) All discharges of pollutants into state waters authorized by an MPDES permit shall be consistent with the conditions of the permit; any sewerage system, treatment works or disposal system expansions, production increases or process modifications, which result in new or increased discharges of pollutants into state waters, shall be reported by submission of a new MPDES permit application or, if such discharge does not violate effluent limitations specified in the MPDES permit, by submission to the department of notice of such new or increased discharges of pollutants.

(ii) The discharge of pollutants to state waters more frequently than or at a level in excess of that identified and authorized by an MPDES permit shall constitute a violation of the conditions of the permit.

(iii) An MPDES permit may be modified, suspended, or revoked in whole or in part during its term under provisions of Section 69-4807.1, R.C.M. 1947 for cause, including but not limited to, and of the following:

(aa) Violation of any conditions of the permit; or

(ab) Obtaining an MPDES permit by misrepresentation or failure to disclose fully all relevant facts; or

(ac) A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

(ad) A failure or refusal by the permittee to comply with the requirements of Section 69-4809.2, R.C.M. 1947.

(iv) An MPDES permit may be modified in whole or in part during its term to apply a more stringent toxic effluent standard or prohibition promulgated by the administrator.

(b) Special conditions. All issued MPDES permits shall contain special conditions consisting of, but not limited to, the following terms:

(i) Authorization of discharges of pollutants into state waters from point sources.

(ii) Effluent standards and, if necessary, compliance schedules on each authorized discharge of pollutants into state waters.

(aa) Permittees having authorized discharges of pollutants into state waters shall be required to take necessary steps to meet the most stringent schedule of compliance contained in applicable effluent standards, water quality standards, and legal requirements developed pursuant to section (5).

(ab) In any case where the period of time for compliance exceeds nine months, the schedule of compliance specified in the permit will set forth interim requirements and dates for their achievement; in no event shall more than nine months elapse between interim dates. If the time necessary for completion of the interim requirement (such as the construction of a treatment facility) is more than nine months and is not readily divided into stages for completion, interim dates shall be specified for the submission of reports of progress towards completion of the interim requirement. For each schedule of compliance, interim dates and the final date for compliance shall, to the extent practicable, fall on the last day of the months of March, June, September, and December.

(ac) Either before or up to 14 days following each interim date and the final date of compliance, the permittee shall provide the department with written notice of the permittee's compliance or noncompliance with the interim or final requirement.

(ad) If a permittee fails or refuses to comply with an interim or final requirement in an MPDES permit, such noncompliance shall constitute a violation of the permit for which the department may modify, suspend, or revoke the permit or take direct enforcement action.

(ae) Any point source, the construction of which is commenced after the effective date of the act and which shall be constructed to meet all applicable standards of performance shall not be subject to any more stringent standard of performance during a 10-year period beginning on the date of completion of such construction or during the period of depreciation or amortization of such facility for the purpose of Section 167 or 169 (or both) of the Internal Revenue Code of 1954, whichever period ends first.

(iii) The basis for calculation of effluent limitations.

(iv) The prohibition of certain discharges without prior approval from the department.

(v) Self-monitoring requirements for each authorized discharge, including but not limited to, the following:

(aa) Pollutants to be monitored;
(ab) Frequency of monitoring, recording, and reporting;
(ac) Analytical and sampling methods to be utilized by the permittee;
(ad) Recording and reporting procedures to be utilized by the permittee; and
(ae) Procedures for reporting other considerations having an effect on authorized discharges or that may affect any of the conditions of the permit.

The permittee will be required to maintain self-monitoring records for a minimum of three years.

The self-monitoring requirements for each authorized discharge will be consistent with monitoring, recording, and reporting requirements specified by the administrator in regulations issued pursuant to the act.

(vi) Requirements for consideration of unusual discharges, including but not limited to, the following:

(aa) Reporting procedures for accidental discharges, plant bypasses, plant upsets, and discharge of oil and hazardous materials, and
(ab) Where applicable, required submittal of an acceptable oil and hazardous materials spill prevention and containment plan.

(vii) Other requirements for publicly owned treatment works. Publicly owned treatment works shall provide notice to the department in the following situations:

(aa) Any new introduction of pollutants into such treatment works from a new point source. For sewerage system extensions to collect sewage, the point source shall be considered to be the entire sewerage system extension and not each individual household hookup.

(ab) Any substantial change in volume or character of pollutants being introduced into such treatment works by a point source introducing pollutants into such works at the time of issuance of the permit.

Such notice shall include information on the quality and quantity of pollutants to be or being introduced into such treatment works and the anticipated impact of such change in the quality and quantity of effluent to be discharged from such publicly owned treatment works.

The owners of publicly owned treatment works shall adopt an industrial user charge system to insure compliance with Section 204(b) of the act.

Industrial users of publicly owned treatment works shall be required to comply with all duly promulgated pretreatment standards, toxic effluent standards, and toxic prohibitions and to submit reports to the treatment works with a copy to the department of any required progress toward compliance with the pretreatment standards.

(viii) Duration of MPDES permit. Every permit issued under this rule shall have a fixed term not to exceed five years.

7. NEBRASKA

7.1 SUMMARY OF WATER QUALITY LAWS

7.1.1 Background

The first comprehensive legislation protecting environmental quality in Nebraska was enacted in 1971 (Nebraska Session Laws, L.B. 939, 1971). This legislation was entitled the "Environmental Protection Act" and remains the basic legislation regulating water quality (R.R.S.N. §§ 81-1503 to 81-1533, 1974 Supp.). The Act provides for the establishment of the Environmental Control Council as the entity responsible for the control of air, water and land pollution (R.R.S.N. § 81-1503, 1974 Supp.). Actual administration of the Act's provisions and the regulations of the Environmental Control Council is delegated to the Department of Environmental Control (R.R.S.N. § 81-1504, 1974 Supp.).

Since enactment, the Nebraska Environmental Protection Act has been amended in all the subsequent sessions of the Nebraska Legislature. Furthermore, several sections of the original legislation were repealed in 1974 (R.R.S.N., L.B. 1029 § 10, 1974, repealing R.R.S.N. §§ 81-1521 and 81-1531).

7.1.2 Policy

The Nebraska Environmental Protection Act does not contain a section which is intended to be a specific declaration of legislative policy. However, the sections of the act which address water quality control are more extensive and developed in greater detail than those which concern air and land quality control (R.R.S.N. § 81-1505, 1974 Supp.). Furthermore, the Act makes it unlawful to pollute air, water, and land and any discharge or emission which reduces the quality of air, water, or land below those standards set by the Council is declared to be a public nuisance (R.R.S.N. § 81-1506, 1974 Supp.).

As part of the regulations of the Environmental Control Council, a specific policy statement has been adopted which states the following:

> Water quality standards were significantly modified on June 30, 1976. Currently, all surface waters shall meet general standards according to their beneficial use. The new standards identify six types of beneficial uses: full body contact, partial body contact, fish and wildlife protection, water supply, agriculture and industrial uses (Rule 2). The new regulations specifically state that these standards for beneficial uses "pertain to water quality only" and "are not intended in any way to conflict with the quantitative beneficial uses provided for in Chap. 46, R.R.S., 1943, regulating irrigation and the authority of the Department of Water Resources in that regard" (Nebraska Water Quality Standards for Surface Waters, Effective 27 Dec. 1976).
>
> The new standards provide general intents covering aesthetic conditions, suspended, colloidal, or settleable solids; toxic and deleterious substances; and residue, oil and chlorides while specific criteria are developed for water in each basin, taking into account the natural conditions where possible.
>
> The water quality standards apply to all surface waters, except that only general criteria under Rule 2.(2) apply to effluents, waters during periods when the flow is less than 0.1 c.f.s. or when the flow is less than the 7-day-10-year low flow (Rule 3). They also do not apply to effluent dominated streams when daily flow is totally composed of effluent nor to mixing zones (*Ibid*.).

Finally, the term "water pollution" is defined in the Act to include "the man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water" (R.R.S.N. § 81-1502 (20), 1974 Supp.). Other definitions in the Act which concern water quality include "Waters of the state," "Point Source," "Effluent limitation," and "Schedule of Compliance" (R.R.S.N. §§ 81-1502 (21) to (24), 1974 Supp.).

7.1.3 Classification

The Environmental Control Council has been given the authority to adopt classifications for state waters (R.R.S.N. § 81-1505, 1974 Supp.). In adopting water classification, the Council is required to consider such factors as the quantity of water; the character of the area and the purpose for which the water in question will be put to use; the historic use for the water in question; and the present extent of existing pollution or contamination (*Ibid*.).

Prior to July 1, 1976, the Council had adopted two basic classifications for water. Briefly, these classifications were:

> Class "A" includes those waters which are suitable for full body contact sports, domestic water supply, and aquatic wildlife. This classification includes those waters which currently have very high water quality.
>
> Class "B" includes those waters which are suitable for partial body contact sports, agriculture, industry, and aquatic wildlife (State of Nebraska, Department of Environmental Control, Water Quality Standards Applicable to Nebraska Waters, p. 22, 1973).

Also prior to July 1, 1976, Nebraska had applied a category system to classify streams and lakes. As of July 1, 1976, this classification system was repealed and now water quality standards are established based upon beneficial uses of a particular body of water.

7.1.4 Standards

Authorization for the adoption of (1) water quality standards, (2) performance standards, (3) pretreatment standards, and (4) toxic pollutant standards, is also granted to the Environmental Control Council (R.R.S.N. § 81-1505, 1974 Supp.).

Performance standards are authorized for adoption as the control standards for pollution discharges (R.R.S.N. § 81-1505, 1974 Supp.). The Council is required to consider the most feasible alternative standards, including a standard which permits no discharge (Ibid.).

Pretreatment standards are applicable to the passage of pollutants through publicly-owned wastewater treatment works (Ibid.). Nebraska has adopted an extensive set of rules which affect wastewater treatment (State of Nebraska, Department of Environmental Control, Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System, 1975).

Toxic pollutant standards are authorized for Council adoption following the consideration of the pollutant's toxicity, degradability, and potential effects (Ibid.). Toxic substance standards are part of the standards adopted for water quality standards for Class "A" and "B" waters (State of Nebraska, Department of Environmental Control, Water Quality Standards Applicable to Nebraska Waters, pp. 23 & 25, 1973).

7.1.5 Permit System

In order to lawfully discharge or emit wastes into Nebraska waters, a current permit from the Department of Environmental Control is required (R.R.S.N. § 81-1506, 1974 Supp.). Briefly, the following activities are expressly required to have a state permit:

(1) discharges which require a permit under the National Pollutant Discharge Elimination System created by the Federal Water Pollution Control Act Amendments of 1972;

(2) construction and operation of any disposal system.

(3) increase in volume or strength of wastes beyond that specified under an existing permit;

(4) construction and operation of an industrial or commercial enterprise which would cause an increase in the discharge of wastes in a manner not currently authorized; and

(5) the construction or use of a new outlet for the discharge of wastes (Ibid.).

The original authorization for the issuance of state permits was contained in the 1971 versions of the Act. A later amendment in 1974 provided for the issuance of permits under the National Pollutant Discharge Elimination System (Nebraska Session Law, L.B. 1029 § 4, 1974).

Application for state discharge permits is made to the Department of Environmental Quality and the permits are issued by the Director of Environmental Control (R.R.S.N. § 81-1507, 1974 Supp.).

7.1.6 Sanctions and Enforcement Measures

The Director of Environmental Control, as the chief administrative officer of the Department of Environmental Control, is charged with the enforcement of the Act (R.R.S.N. § 81-1508, 1974 Supp.). Under the Act, the Director has the authority to issue a complaint against persons who have allegedly violated a provision of the Act or regulation of the Council (Ibid.). The Director also sits as the hearing officer and makes findings of fact and conclusions of law (Ibid.). Any person who is adversely affected by a final order or determination by the Director can appeal the decision to the district court of Lancaster County, Nebraska (R.R.S.N. § 81-1509, 1974 Supp.).

Various penalties are provided for under the Act depending on the nature of the violation. Violations of permit conditions or limitations under the National Pollutant Discharge Elimination System (NPDES) is termed a misdemeanor and conviction can result in a fine of from one hundred dollars to five hundred dollars plus costs for each day the violation occurs (R.R.S.N. § 81-1508, 1974 Supp.). Wilful violations are punished as a misdemeanor by a fine of up to five thousand dollars for each day of violation, or by imprisonment in the county jail for up to six months (Ibid.). Penalties are also provided for refusing entry and inspection by Department of Environmental Control personnel, and for knowingly making false representations on NPDES applications and records (Ibid.).

If the violation results in the destruction of fish or other wildlife, the violator is liable to the state for the cost of restocking the wildlife (Ibid.). Also, the Director, through the county attorney or the Attorney General, can petition the district court where the violation occurs for an injunction to prevent the infraction of the Act or Council rules (Ibid).

7.2 ADMINISTRATION OF THE LAWS

7.2.1 Water Quality Control

The rule-making body for water quality concerns is the Nebraska Environmental Control Council. The Council is composed of sixteen members, representing various public and private interests, who are appointed for four and two year terms by the Governor (R.R.S.N. § 81-1503, 1974 Supp.). The duties of the Council include the adoption of rules, regulations and standards for air, land, and water quality (R.R.S.N. § 81-1505, 1974 Supp.).

Administration of the Act and Council regulations is vested with the Department of Environmental Control which exercises the following powers: (1) general supervision and enforcement of the Act and regulations; (2) development of comprehensive programs for pollution abatement; (3) coordination with other levels of state, local and federal government, to further the purposes of the Act; (4) to function as the state control agency for purposes of the federal Water Pollution Control Act Amendments of 1972; (5) to conduct studies and investigations on the control of pollution, and (6) to conduct public education programs (R.R.S.N. § 81-1504, 1974 Supp.). The Director of Environmental Control is responsible for administration of the department and all standards, rules and regulations adopted by the Council (R.R.S.N. § 81-1503, 1974 Supp.). The Director is appointed by the Governor and serves at his pleasure (Ibid.). Figure 1 illustrates the agencies with major functions over water resources.

No other administrative agencies appear to be vested with authority in the area of water quality control. However, other levels of government (counties, municipalities, and special districts) are granted authority for pollution control. These specific instances are discussed in the following sections.

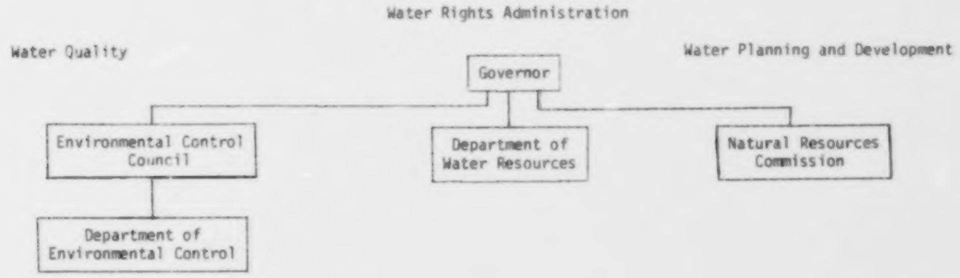
Responsibility for administering Nebraska's water laws is placed with the Department of Water Resources. The Department plays a primary role in the supervision of the appropriation, distribution and diversion of water. Further, the Department must determine and record permit priorities and determine the amount of appropriations.

7.3 SPECIAL LEGISLATION

7.3.1 County Zoning

Counties which have populations greater than thirty thousand persons and which have adopted county zoning regulations may "provide rules for the prevention, abatement, and removal of nuisances, including the pollution of air and water" (R.R.S.N. § 23-174.10, 1943). Any regulations which the county board of commissioners adopt must be consistent with the general laws of the state and cannot be enforced within the limits of an incorporated city or village (Ibid.).

Figure 1. Nebraska Water Agencies and Major Functions


Water Rights Administration
Water Quality
Water Planning and Development
Governor
Environmental Control Council
Department of Water Resources
Natural Resources Commission
Department of Environmental Control

7.3.2 Municipalities

Nebraska cities and villages are given authority to control pollution which may occur beyond their corporate limits. For example, second class cities can prevent pollution or injury to its source of water supply up to fifteen miles beyond city limits (R.R.S.N. § 17-536, 1943) and primary class cities are given similar extraterritorial authority (R.R.S.N. § 15-237, 1943).

7.3.3 Water Pollution Control Tax Refund

A recently enacted piece of legislation enables the recovery of state sales and use taxes which have been collected on equipment or facilities which are primarily for the purpose of reducing, controlling or eliminating air or water pollution caused by industrial or agricultural waste (R.R.S.N. § 77-27, 1949, 1974 Supp). The refund of the above taxes is dependent upon the finding of the Department of Health and the Department of Environmental Control that the facility is designed and functions for the purpose stated in the Act and that it meets the intent and purposes of the Environmental Protection Act (R.R.S.N. § 77-27, 151, 1974 Supp.). The actual refund is made by the State Tax Commissioner (*Ibid*.).

7.4 RELATED LEGISLATION

7.4.1 Natural Resources Districts

A 1975 Act by the Nebraska Legislature subdivided the state into Natural Resource District with local boards of directors, who are supervised by the State Natural Resources Commission (R.R.S.N. §§ 2-3201 to 2-3272, 1975 Supp.). Pollution control is specifically listed as one of the purposes for the creation of such districts (R.R.S.N. § 2-3262, 1975 Supp.).

Other special purpose districts (Rural Water Districts, Ground Water Conservation Districts, Drainage Districts, Reclamation Districts and Irrigation Districts) are given the authority to merge with Natural Resource Districts and can function as "special improvement areas" within the parent district (R.R.S.N. § 2-3208, 1975 Supp.).

Initial financing for the district is provided through a one mill levy on the tangible property within the district, and it is possible for the voters in the district to raise the levy by a referendum on the issue (R.R.S.N. § 2-3225, 1975 Supp.). Provision is also made for sharing revenue collected in this manner with other special purpose districts for the financing of common programs during the year in which the tax is collected (*Ibid*.). Further revenue can be generated by levying an assessment against land benefited from irrigation development (R.R.S.N. § 2-3239, 1975 Supp.).

Districts are also given the power to act as the fiscal agent of the United States in the operation and management of reclamation projects constructed with federal funds (R.R.S.N. § 2-3236, 1975 Supp.). Additionally, Natural Resource Districts are granted broad powers to acquire water rights, exercise the power of eminent domain, and to store, develop and transport water for domestic purposes (R.R.S.N. §§ 2-3233 to 2-3238, 1975 Supp.).

These districts have authority to adopt land use regulation controlling the land located in their boundaries (R.R.S.N. § 2-3248, 1975 Supp.). All regulations, however, must be submitted on an item-by-item basis for voter approval in a referendum held specifically for their adoption (R.R.S.N. § 2-3250, 1975 Supp.).

Finally, the creation of these districts on a statewide basis resulted in the transfer and allocation of those functions previously performed by Soil and Water Conservancy Districts, Watershed Conservancy Districts, Watershed Districts, Advisory Watershed Improvement Boards, and Watershed Planning Boards (R.R.S.N. § 2-3261, 1975 Supp.).

7.4.2 Drainage Districts

Boards of county commissioners are granted the authority to undertake the performance of work on ditches, drains and watercourses needed to drain public and private lands (R.R.S.N.§§ 31-101 to 31-142, 1943). Drainage Districts can be established by submission of a landowner's petition to the district court (Nebraska Statutes 31-301 to 31-377, 1943) and by land owner referendum (Nebraska Statutes 31-401 to 31-451, 1943).

7.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

7.5.1 Agriculture Generally

The Environmental Control Council is given express authority to adopt livestock waste control regulations (R.R.S.N. § 81-1505 (10), 1974 Supp.). Pursuant to this authority, an extensive and detailed set of regulations have been adopted (State of Nebraska, Department of Environmental Control, *Rules and Regulations Pertaining to Livestock Waste Control*, 1975).

These regulations state that "livestock waste control facilities will be required whenever the runoff therefrom creates a nuisance, violates Nebraska Water Quality Standards, results in a discharge into any waters of the State, or violates the Nebraska Environmental Protection Act" (State of Nebraska, Department of Environmental Control, *Rules and Regulations Pertaining to Livestock Waste Control*, Rule 14, 1975). However, livestock operations which do not cause pollution can apply to the Director of Environmental Control for a permit to operate without construction of livestock waste constrol facilities (*Ibid*., Rule 10). Existing livestock operations, at the time the rules were adopted, can continue to function for one year before they must be in compliance, and once the operation meets the state requirements it is deemed to be prima facie evidence that the operation is not a public nuisance (*Ibid*., Rules 22 and 23).

7.5.2 Irrigation Return Flow

In this area, Nebraska Department of Environmental Control Rules and Regulations are significant not because of their application to the problems of irrigation return flow, but because of the express exemption of certain discharges from NPDES permits (State of Nebraska, Department of Environmental Control, *Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System*, Rule 3, 1975). The discharges exempt under the 1975 Department rules are:

5) Discharges of pollutants from agricultural activities, including *irrigation return flow* and runoff from orchards, cultivated crops, pastures, range lands, and forest lands, *except* that this exclusion shall not apply to:

a) Animal confinement facilities requiring waste control facilities to prevent discharges to waters of the State, pursuant to *Nebraska Rules and Regulations Pertaining to Livestock Waste Control*, and

b) Point source discharges from more than 3,000 acres of irrigated land under one ownership or under control of one irrigation district or point source discharges from less than 3,000 acres identified by the Director as a significant contributor of pollution;

c) Point source discharges from an agricultural or silvicultural activity which has been identified by the Director or the Regional Administrator as a significant contributor of pollution (Nebraska Department of Environmental Quality, *NPDES*, Rule 3, 1975, emphasis added).

The above rule would appear to have the effect of removing the regulation of water quality control problems due to irrigation return flow from the duties of the Nebraska Department of Environmental Control.

7.6 CASE LAW APPLICABLE TO AGRICULTURE

The predominant water quality issue which has been litigated in private legal actions in Nebraska courts has concerned the liability of an upstream user for polluting waters which are subsequently used by individuals downstream. The standard approach to this fact situation has been to bring an action in equity to enjoin the pollution as a continuing nuisance.

The earliest case demonstrating this approach is that of *Barton v. Union Cattle Company* (28 Neb. 350, 44 N.W. 454, 1889). In this case, the Nebraska Supreme Court held that an injunction should issue against the continuing nuisance caused by the pollution of a stream from the waste of a cattle feeding operation which rendered the water unfit for general farming purposes and livestock watering (44 N.W. 454, 455).

In a more recent case, the Nebraska high court refused to find that a hog feeding operation which discharged waste into a stream was a nuisance as the plaintiffs had failed to show that they had suffered damages different from the other owners of land along the stream (*Vana v. Grain Belt Supply* 148 Neb. 125, 10. N.W.2d 474, 1943).

Due to the transition that Nebraska water law has been experiencing in moving from riparian doctrine to that of prior appropriation, the cases which have considered issues arising under dispute between two users have not determined whether the appropriative right includes a quality component as part of the right to apply a specific quantity of water to a beneficial use.

At the date of this report, there have been no reported decisions of Nebraska courts interpreting the Environmental Protection Act.

7.7. INFORMATION SOURCES

Fischer, R. S., R. S. Harnsberger, and J. C. Oeltjen, "Rights to Nebraska Streamflows: An Historical Overview with Recommendations," 52 *Neb. L.R.* 313 (1972).

Harris, Helen C. and Miriam Hendrickson, "Regulation of Water Pollution from Agricultural Point Sources in Nebraska: Impact of the NPDES Permit Program on Feedlot Operations," 9 *Creighton L.R.* 83 (1975).

Penn, Sarah J., "The Nebraska Environmental Protection Act: Effects and Implications for the Nebraska Community," 7 *Creighton L.R.* 283 (1973).

Rozmarin, George, "Dual System of Water Rights in Nebraska," 48 *Neb. L.R.* 488 (1969).

Scheffield, Les, contributing ed., "New Nebraska Water Law," *Irrigation Age*, Sept. 1975, p. 27.

____________, *Big Blue River Basin*, Nebraska Soil and Water Conservation Commission, State Water Plan, publication No. 201, 1968.

Yeutler, C., "Legal Economics Critique of Nebraska Watercourse Law," 44 *Neb. L.R.* 11 (1965).

____________, *Rules & Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System*, The State of Nebraska, Department of Environmental Control, Lincoln, 1975.

____________, *Water Quality Standards Applicable to Nebraska Waters*, State of Nebraska, Department of Environmental Control, 1973.

____________, *Nebraska Water Quality Standards for Surface Waters of the State*, Department of Environmental Control, effective 30 June 1976, Rule 1 effective 27 December 1976, Rules 3 and 7 amended effective 26 September 1976.

APPENDIX A

8. NEVADA

8.1 SUMMARY OF WATER QUALITY LAWS

8.1.1 *Background*

In 1903, the Legislature enacted a statute which made it a misdemeanor for any person to deposit any sawdust, rubbish, filth, or poisonous or deleterious substance or substances, liable to affect the health of persons, fish or livestock in any waters of the state (Session Acts, 1903, p. 214). This statute provided for a fine of not less than $50 nor more than $5,000 upon conviction. This statute was amended in 1907 to make provision for the reconstruction of old systems of drainage sewerage by municipalities (Session Acts, 1907, p. 104 amended in 1909, 1911, 1913, 1915 to extend the time for reconstruction).

In 1911, the Nevada Legislature enacted a statute which made it a gross misdemeanor to "knowingly permit any act or omit any duty or precaution..." whereby the purity or healthfulness of the water supplied for public use was impaired (1911 C and P §275; R.L. §6540; N.C.L. § 10223).

Twenty years later, the Nevada Legislature provided for the creation of conservation districts in order to conserve and develop renewable natural resources through organization and operation of these districts (1931 NCL §6870.02). This same legislature also declared its policy to be one which recognized the ever-increasing demands on renewable resources and "the need to conserve, protect and develop such resources at such quality as will meet the needs of the people of the state" (*Ibid*).

The State Conservation Commission was created in 1937 to carry out the policies of the state in programs for the conservation of renewable resources and to represent the state in matters affecting such resources (Part. 4:212:1937; See N.R.S. §548:115.175).

In 1957, the State Board of Health adopted water pollution control regulations because "the pollution of the waters of this State constitutes a menace to health and welfare, and adversely affects wildlife, fish and aquatic life, and obstructs domestic, agricultural, industrial, recreational and other legitimate uses of water..." (State of Nevada; Division of Health, *Water Pollution Control Regulations*, adopted by the State Board of Health, July 16, 1957, amended July 1, 1967).

In 1972, the State Commission of Environmental Protection promulgated Water Pollution Control Regulations (see *Environment Reporter, State Water Laws*, Vol. 2, 841:0501-.0518). These regulations require a waste discharge permit before any person can discharge or deposit wastes into public waters. Agricultural irrigation return waters are specifically exempted from these regulations (*Environment Reporter, State Water Laws*, Vol. 2, 841:0502, 3.1.5). One year later, the Nevada Legislature enacted the County Sewage and Waste Water Law (added to N.R.S. by 1973; amended 1975, 1336; see N.R.S. §244.922 *et. seq*.). This act enabled counties having a population of 200,000 or more to become "the master agency within its territory for the collection, disposal and treatment of sewage and waste water (N.R.S. §244.9222). The applicability of this law in relation to this study will be examined in a later section.

The State Environmental Commission adopted NPDES Regulations on October 24, 1973. The State sought delegation of the NPDES by November 1, 1974 and took action to insure this. On October 15, 1975, the Environmental Protection Agency delegated authority to Nevada for the discharge of pollutants into navigable waters under NPDES (*Environment Reporter, Current Developments*, May 1, 1975 to April 30, 1976, p. 455).

The Nevada Water Pollution Control Law was also enacted in 1973 (added to N.R.S. by 1973, 1707; See N.R.S. §445.131 *et. seq*.). This act remains the heart of Nevada's water pollution control law. This act relegated water pollution control to the Department of Human Resources and the State Environmental Commission (N.R.S. §445.141, 146, 201, 211). They later adopted procedural regulations for the administration of discharge permits in 1975 (*State of Nevada--Procedural Regulations for Administration of Discharge Permits*, adopted by the State Environmental Commission, January 25, 1975, Department of Human Resources, Bureau of Environmental Health).

8.1.2 *Policy*

The Nevada Legislature has made a finding that the pollution of water adversely affects public health and welfare, is harmful to wildlife, fish and other aquatic life and impairs agricultural and other beneficial uses of water (N.R.S. §445.132(1)).

In light of these findings, it is the public policy of the state of Nevada to:

(a) Restore and maintain the chemical, physical and biological integrity of water within this state;
(b) Prevent, reduce and eliminate pollution;
(c) Plan the development and use, including restoration, preservation and enhancement of land and water resources; and
(d) Consult and otherwise cooperate with other states, state and interstate agencies and the Federal Government in carrying out these objectives (N.R.S. §445.132(2)).

Pollution is defined in Nevada statutes as meaning "the man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water" (N.R.S. §445.181). Pollutant is defined in Nevada statutes as meaning:

> dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and *agricultural waste* discharged into water (N.R.S. §445.178, emphasis added).

Further, point source is defined as:

> any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or

> vessel or other floating craft, from which pollutants are or may be discharged (N.R.S. §445.176).

Further evidencing Nevada's policy in relation to the state's natural resources is the declaration of legislative policy in the Conservation Districts Law (N.R.S. §548.010 et. seq.).

> It is hereby declared, as a matter of legislative determination:
> 1. That the renewable natural resources of the State of Nevada are basic assets.
> 2. That they are being affected by the ever-increasing demands of farm and ranch operations and by changes in land use from agricultural to nonagricultural uses, such as, but not limited to, residential and commercial developments, highways, and airports.
> 3. That conservation, protection, and controlled development of these renewable natural resources are necessary at such rate and such levels of quality as will meet the needs of the people of this state (N.R.S. §548.095).
>
> It is hereby declared to be the policy of the legislature to recognize the ever-increasing demands on the renewable natural resources of the state and the need to conserve, protect and develop such resources at such levels of quality as will meet the needs of the people of the state (N.R.S. §548.110).

In a related area--that of solid waste disposal--it is the policy of the state to:

> regulate the collection and disposal of solid waste in a manner that will:
> 1. Protect public health and welfare.
> 2. Prevent water or air pollution.
> 3. Prevent the spread of disease and the creation of nuisances.
> 4. Conserve natural resources.
> 5. Enhance the beauty and quality of the environment (N.R.S. §444.440).

8.1.3 Classification

Nevada waters are classified as either Class A, Class B, Class C, or Class D by the State Environmental Commission (Nevada Water Pollution Control Regulations, adopted by the State Environmental Commission, November 14, 1972 last amended on January 25, 1975. See Environment Reporter, State Water Laws, Vol. 2, §841:0504 to 841:0518).

The "A" classification is "intended primarily to include waters... located in areas of little human habitation; no industrial development or intensive agriculture; and where the watershed is relatively undisturbed by man's activity" (Environment Reporter, State Water Laws, Vol. 2, §841:05, §4.2.1).

Beneficial uses included under this classification include: "Drinking water supply with treatment by disinfection only suitable for aquatic life habitat, wildlife propagation, agricultural use, recreation, boating and esthetics" (Environment Reporter, State Water Laws, Vol. 2, §841:05, §4.2.1.1).

The "B" classification includes waters which are located in areas of light or moderate human habitation, little industrial development, light to moderate agricultural development, and where the watershed is only moderately influenced by man's activity (Environment Reporter, State Water Laws, Vol. 2, §841:0510, §4.2.2).

Beneficial uses under this classification include: "Drinking water supply with treatment by disinfection and filtration only, for agricultural use, aquatic life and wildlife propagation, recreation, industrial supply and esthetics" (Environment Reporter, State Water Laws, Vol. 2, §841:0510, §4.2.2.1).

Waters falling under the "C" classification include those "which are located in areas of moderate to urban habitation, industrial developments present in moderate amounts, intensive agricultural practices and the watershed considerably altered by man's activity" (Environment Reporter, State Water Laws, Vol. 2 §841:0514, §4.2.3).

Beneficial uses included under this classification are: "Domestic water supply following complete treatment, agricultural use, aquatic life, wildlife propagation, recreation and industrial supply."

Waters under the "D" classification include: "waters ...located in areas of urban development, highly industrialized or intensively used for agriculture or combination of all the above and where effluent sources include a multiplicity of waste discharges from the highly altered watershed" (Environment Reporter, State Water Laws, Vol. 2, §841:0517, §4.2.4). Beneficial uses under this classification include "agricultural use, boating and esthetics and industrial supply except for food processing purposes" (Environment Reporter, State Water Laws, Vol. 2, §841:0517, §4.2.4.1).

8.1.4 Standards

The State Environment Commission establishes water quality standards:

> 1. To protect the public health or welfare;
> 2. To enhance the quality of water;
> 3. To increase the use and value of public water supplies;
> 4. To promote the propagation of fish and wildlife; and
> 5. To enhance recreational, agricultural, industrial, navigational and other beneficial uses (N.R.S. §445.244).

In promulgating discharge standards, consideration must be given to:

> a. The effect of the discharge on the receiving water and its beneficial use.
> b. The need for standards that specify by chemical, physical, biological or other characteristics the extent to which pollution by various substances will not be tolerated.
> c. Requirements for establishing water quality standards promulgated from time to time by the Federal Environmental Protection Agency (Nevada Water Pollution Control Regulations, loc. cit. §3.1.3).

The quality of any waters that receive waste discharges must be such that no impairment of the beneficial usage of water occurs (Nevada Water Pollution Control Regulations, §4.1). However, the Commission has recognized that natural water conditions may be outside of the limits established by standards (Ibid). Furthermore, water quality criteria as it relates to agricultural use must be maintained in a quality which is "suitable for stock watering and irrigation without treatment" (Nevada Weter Pollution Control Regulacions, §4.1.1.a).

Nevada also has narrative standards which are applicable to all waters of the State (Nevada Water Pollution Control Regulations, §4.1.2). These standards provide that all waters of the State must be:

> a. Free from substances attributable to domestic or industrial waste or other controllable sources that will settle to form sludge or bottom deposits in amounts sufficient to be unsightly, putrescent or odorous, or in amounts sufficient to interfere with any beneficial use of the water.
> b. Free from floating debris, oil, grease, scum, and other floating materials attributable to domestic or industrial waste or other controllable sources in amounts sufficient to be unsightly or in amounts sufficient to interfere with any beneficial use of the water.
> c. Free from materials attributable to domestic or industrial waste or other controllable sources in amounts sufficient to produce taste or odor in the water or detectable off-flavor in the flesh of fish, or in amounts sufficient to change the existing color, turbidity or other conditions in the receiving stream to such degree as to create a public nuisance, or in amounts sufficient to interfere with any beneficial use of the water.
> d. Free from high temperature, biocides, organisms pathogenic to human beings, toxic, corrosive, or other deleterious substances attributable to domestic or industrial waste or other controllable sources at levels or combinations sufficient to be toxic to human, animal, plant or aquatic life or in amounts sufficient to interfere with any beneficial use of the water... (Nevada Water Pollution Control Regulations, §4.1.2).

8.1.5 Permit System

The Department of Human Resources is the agency who issues discharge permits. These permits are issued for a period not to exceed five years and the Department will issue a new permit upon expiration of an existing permit if:

> 1. The permit holder is in compliance with or has substantially complied with all the terms, conditions, requirements and schedules of compliance of the expired permit;
> 2. The Department has current information on the nature, contents and frequency of the permit holder's discharge, either pursuant to the submission of new forms and applications or pursuant to monitoring records and reports submitted to the Department by the permit holder; and
> 3. The discharge is consistent with applicable effluent standards and limitations, water quality standards and other legally applicable requirements (N.R.S., §445.227).

Applications for renewal must be filed at least 180 days prior to the expiration of the permit (Nevada Water Pollution Control Regulations, Environment Reporter, State Water Laws, Vol. 2, §841:0502). Each permit must insure compliance with effluent limitations, standards of performance for new sources, effluent standards, prohibitions and pretreatment standards (N.R.S. §445.231). The permit must also specify average and maximum daily or other appropriate quantitative limitations for the level of pollutants in the discharge (N.R.S. §445.231(2)).

A permit will not be issued if the proposed discharge would be inconsistent with an areawide waste treatment management plan, or which would be inconsistent with any rules, regulations, and guidelines promulgated by the State Environmental Commission (N.R.S. §445.224). The Commission requires that notification be made to the Department by "all permit holders whose production increases, or whose process modifications or facility expansion result in new or increased discharges" (N.R.S. §445.234).

A permit may be revoked, modified or suspended if there has been a violation of any term or condition of the permit, the permit was obtained by misrepresentation, or there has been a change of conditions (N.R.S. §445.271).

Nevada water pollution control regulations prohibit the conducting of an agricultural operation which will or may cause or tend to cause pollution of any waters of the state without first obtaining a permit from the Department (Nevada Water Pollution Control Regulations, §3.1.2, adopted by the State Environmental Commission. See Environment Reporter, State Water Laws, Vol. 2, §841:0501 et. seq.). Specifically exempted from permit requirements are agricultural irrigation return waters (Nevada Water Pollution Control Regulations, §3.1.5 (c), emphasis added).

> Any person required to obtain a new, modified or renewal permit from the Department shall submit a written application on a form provided by the Bureau of Environmental Health. All application forms must be completed in full, signed by the applicant or his legally authorized representative, and accompanied by three copies of all required exhibits. The name of the applicant must be the legal name of the owner of the facilities or his agent or the lessee responsible for the operation and maintenance of the facilities. An application submitted by a corporation must be signed by the principal executive officer and who has been designated by the principal executive officer to make such applications on behalf of the corporation. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or by the proprietor. In the case of a municipal, State or other public facility the application must be signed by either a principal executive officer, ranking elected official, or other duly authorized employee. Each application must contain a certification by the person signing the application that he is familiar with the information provided, that to the best of his knowledge and belief such information is complete and accurate, and that he has the authority to sign and execute the application. An application is not deemed to be complete until any additional information requested by the Department is submitted by the applicant (Nevada Water Pollution Control Regulations, §3.4.1).

The Department is given the authority to issue special permits for unexpected emergency activities or discharges which are essential to the protection of property and preservation of public health and welfare (Nevada Water Pollution Control Regulations, §3.7.1).

It is unlawful for any person to discharge any pollutant from any point source into any waters of the State unless a permit authorizes such a discharge (State of Nevada Procedural Regulations for Administration of Discharge Permits, adopted by the State Environmental Commission on January 25, 1975, Article 3.1). Nevada's procedural regulations for the administration of discharge permits require that a person who is presently discharging pollutants to file a complete Refuse Act or NPDES application with the Federal Government (Nevada Procedural Regulations, Article 3.2.1).

Any person who desires to commense discharges of pollutants must file a complete permit application within 180 days in advance of the date of the proposed discharge, or within a time which is sufficient to insure compliance with Section 306 of the Federal Water Pollution Control Act (P.L. 92-500; 33 U.S.C. 1251 et. seq.).

The Department of Human Resources must formulate a tentative determination regarding permit applications in advance of public notice of the proposed issuance or denial of the permit (Nevada Procedural Regulations, Article 4.1.1). This determination must include a proposed determination to issue or deny a permit for the described discharge.

If the determination is to issue the permit, the determination must include: (1) proposed effluent limitations; (2) a proposed schedule of compliance, including interim dates and requirements for meeting the proposed effluent limitations; and (3) a brief description of any other proposed special conditions which will have a significant impact upon the discharge described in the application (Nevada Procedural Regulations, Articles 4.1.1 to 4.1.1.2.3).

Public notice of every complete application for a permit must be circulated in a manner which is designed to inform interested persons (Nevada Procedural Regulations, Article 4.2). This notice must be circulated within the geographical area of the proposed discharge by publishing in local newspapers and periodicals (Nevada Procedural Regulations, Article 4.2.1.1). The contents of the public notice must include the following: (1) the name, address and phone number of the Department; (2) the name and address of each applicant; (3) a brief description of each applicant's activities or operations which result in the discharge described in the application; (4) the name of the waterway to which each discharge is made, a short description of the location of each discharge and an indication of whether the discharge is existing or new; (5) a statement of the tentative determination to issue or deny a permit for the discharge; (6) a brief description of the procedures for the formulation of final determinations including the required 30 day comment period; and (7) the address and phone number of the premises at which interested persons may obtain further information, request a copy of the draft permit, request a copy of the fact sheet, and inspect a copy of relevant forms and documents (Nevada Procedural Regulations, Articles 4.2.3 to 4.2.3.7).

For every discharge, the Director must prepare a fact sheet which must include the following:

1. A sketch or detailed description of the location of the discharge.
2. A quantitative description of the discharge described in the NPDES application which includes the following:
    a. the rate or frequency of the proposed discharge; if the discharge is continuous, the average daily flow in gallons per day or million gallons per day;
    b. for the thermal discharges subject to limitation under the Act, the average summer and winter temperatures in degrees Farenheit; and
    c. the average daily discharge in pounds per day of any pollutants which are present in significant quantities or which are subject to limitations or prohibition under Sections 301, 302, 306, or 307 of the Act and regulations published thereunder.
3. The tentative determinations discussed earlier.
4. A brief citation, including a brief identification of the uses for which the receiving waters have been classified, of the water quality standards and limitations applied to the proposed discharge; and
5. A fuller description of the procedures for the formulation of final determinations than that given in the public notice including:
    a. the 30 day comment period;
    b. procedures for requesting a public hearing and the nature thereof; and
    c. any other procedures by which the public may participate in the formulation of the final determinations (Nevada Procedural Regulations, Articles 4.3.1 to 4.3.1.5.3).

The Director must specify the average and maximum daily quantitative limitations for the level of pollutants in the authorized discharge in terms of weight (Nevada Procedural Regulations, Article 5.3) and any discharge which is authorized by a permit may be subject to monitoring requirements for the flow (in gallons per day) and the following pollutants:

1. pollutants which are subject to reduction or elimination under the terms and conditions of the permit;
2. pollutants which the Director finds could have a significant impact on the quality of the waters of the State;
3. pollutants specified by the administrator of the Environmental Protection Agency as subject to monitoring; and
4. any pollutants in addition to the above which the Regional Administrator of the Environmental Protection Agency requests in writing be monitored (Nevada Procedural Regulations, Article 7.1 to 7.1.2.2.4).

Discharge of pollutants from agricultural activities, including irrigation return and runoff from orchards, cultivated crops, pastures, rangelands, and forest lands are specifically exempted from the requirements of obtaining a discharge permit (State of Nevada Water Control Regulations, adopted by the State Environmental Commission, October 24, 1973 last amended on January 25, 1975, Article 2.2.1.1, 2.2.1.1.3).

This exclusion does not apply to:

discharge of irrigation return flows (such as tailwater, tile drainage, surfaced groundwater flow or bypass water), operated by public or private organizations or individuals, if: (1) there is a point source of discharge (e.g., a pipe, ditch, or other defined or discrete conveyance, whether natural or artificial); and (2) the return flow is from land areas of more than 3,000 contiguous acres, or 3,000 non-contiguous acres which use the same drainage system;

> and discharges from any agricultural... activity which have been identified by the Administrator of the Environmental Protection Agency or the Director of the Department of Human Resources as a significant contributor of pollution (Nevada Water Pollution Control Regulations, Article 2.2.1.1.3.4 and .5).

8.1.6 Sanctions and Enforcement Measures

Nevada water pollution control regulations make it unlawful for any person to discharge any pollutant from any point source into any waters of the State (Nevada Water Pollution Control Regulations, Article 2.2.1. See also N.R.S. §445.271).

When the Director finds a violation of the Federal Water Pollution Control Act, the Nevada Water Pollution Control Law, or any rule, regulation, standard or permit, he may issue an order pursuant to N.R.S. Sect. 445.324, commence a civil action, or request the Attorney General to institute by indictment or information a criminal prosecution pursuant to N.R.S. Sect. 445.334 and 445.337 (Nevada Water Pollution Control Regulations, Article 2.11.1 to 2.11.1.3. See also N.R.S. §445.317). Alleged violations of water pollution control statutes and regulations are investigated by a member of the Bureau of Environmental Health's staff (State of Nevada Water Pollution Control Program Plan FY 1975, p. 18, 8.1). The Attorney General is responsible for enforcing the water pollution control statutes and regulations, while enforcement of statutes and regulations which concern subdivisions and individual sewage disposal is given to the District Attorney (Water Pollution Control Program Plan, 8.2).

If a discharge fails to comply with N.R.S. Sect. 445.231 and .234, the Department has the authority to require the permit holders to take specific steps to bring the discharge within these statutes (N.R.S. §445.241).

To enforce any rule, regulation, order or permit, the Director or his authorized representative has the power to enter any premises to inspect any monitoring equipment and sample any discharge (N.R.S. §445.304). Further, the Director is authorized to seek injunctive relief to prevent the continuance or occurence of any act or practice which violates the Nevada Water Pollution Control Law, or any permit, rule, regulation or order (N.R.S. §445.327). If the Director can show that a violation exists, a court may issue prohibitory and mandatory injunctions including temporary restraining orders issued ex parte or after notice and hearing and preliminary or permanent injunctions (N.R.S. §445.327).

Violation of any water pollution control statute, permit, rule, regulation, standard or order subjects the violator to a civil penalty up to $10,000 per day (N.R.S. §445.331). The Department may also recover actual damages to the state resulting from the violation and includes any expenses incurred in removing, correcting and terminating any adverse effects resulting from the discharge of pollutants and compensation for any loss or destruction of wildlife, fish or aquatic life (N.R.S. §445.331(2) and (3)).

Any person who intentionally or with criminal negligence commits a violation of N.R.S. Sect. 445.221 or .254, or any effluent limitation standard or performance, or toxic and pretreatment effluent limitation, or the terms or conditions of any permit, is guilty of a gross misdemeanor and is punishable by a fine of not more than one year, or both (N.R.S. §445.334).

If a second violation occurs, such person is upon conviction guilty of a felony and is subject to a fine of up to $50,000 or by imprisonment in the state prison for not less than one year nor more than six years, or by both fine and imprisonment (N.R.S. §445.334).

Finally, by knowingly making a false statement, representation or certification in any application, record, report, plan or other document, such person is guilty of a gross misdemeanor punishable by a fine of not more than $10,000, or by imprisonment in the county jail for not more than one year, or both (N.R.S. §445.337).

8.2 ADMINISTRATION OF THE LAWS

Water pollution control is largely the responsibility of the Department of Human Resources (hereafter Department) and the State Environmental Commission. The Department consists of the State Health Division which has a branch entitled the Bureau of Environmental Health.

8.2.1 Department of Human Resources

The Department is the designated water pollution control agency for the state of Nevada for all purposes of federal water pollution control legislation (N.R.S. §445.211). The Department must establish a continuing planning process which is consistent with all applicable federal requirements to develop plans for all waters of the state (N.R.S. §445.257). These plans must include:

1. adequate effluent limitations and schedules of compliance;
2. the incorporation of all elements of any applicable areawide waste management plans and basin plans under N.R.S. §445.131 to 445.354, inclusive;
3. total maximum daily load for pollutants;
4. procedures for revision;
5. adequate authority for intergovernmental cooperation;
6. adequate implementation, including schedules of compliance, for revised or new water quality standards;
7. controls over the disposition of all residual waste from any water treatment processing; and
8. an inventory and ranking, in order of priority, of needs for construction of waste treatment works required to meet applicable requirements (N.R.S. §445.257).

The Department may by order or permit require the owner or operator of any source of a discharge of pollutants into state waters to establish and maintain such records, make reports, install and maintain biological monitoring methods, sample discharges and provide any required information relating to discharges (N.R.S. §445.307).

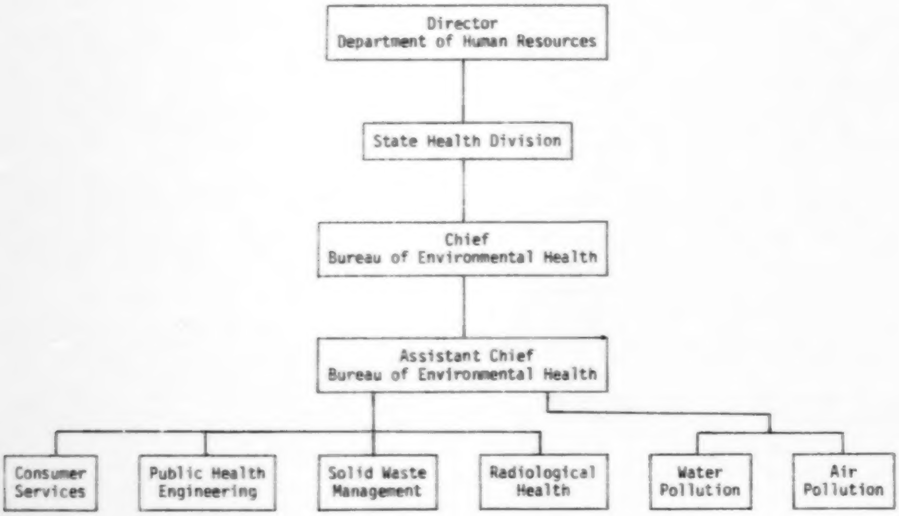
Most importantly, the Department is the final authority in the administration of water pollution prevention, abatement and control (N.R.S. §445.344). Any other department or agency is expressly prohibited from permitting the discharge of wastes into the waters of the state which would result in the pollution of such waters in excess of any water quality standard (N.R.S. §445.344).

The Director of the Department has the following powers and duties:

1. To perform any acts consistent with the requirements of NRS 445.131 to 445.354, inclusive, and the requirements of federal water pollution control legislation and conditions thereof relating to participation in and administration by this state of the National Pollution Discharge Elimination System;
2. To administer and enforce the provisions of NRS 445.131 to 445.354, inclusive, and all rules, regulations and standards promulgated by the commission, and all orders and permits promulgated or issued here under by the department;
3. To examine and approve or disapprove plans and specifications for the construction and operation by a political subdivision of new sewerage systems and treatment works and extensions, modifications of or additions to new or existing sewerage systems or treatment works;
4. To advise, consult and cooperate with other agencies of the state, the Federal Government, other states, interstate agencies and with other persons in furthering the purposes of NRS 445.131 to 445.354, inclusive;
5. To qualify for, accept and administer loans and grants from the Federal Government and from other sources, public or private, for carrying out any functions under NRS 445.131 to 445.354, inclusive;
6. To encourage, request, participate in or conduct studies, investigations, research, experiments, demonstrations and pilot programs by contract, grant or other means;
7. To maintain and to require others to maintain records, monitoring devices and procedures for making inspections and obtaining samples necessary to prepare reports;
8. To collect and disseminate information to the public as the director deems advisable and necessary for the discharge of his duties under NRS 445.131 to 445.354, inclusive;
9. To develop comprehensive plans and programs for preventing, reducing or eliminating pollution, with due regard to the improvements which are necessary to conserve such waters for the protection and propagation of fish and aquatic life, wildlife, recreational purposes, public water supply, *agricultural*, industrial and other purposes;
10. To certify all costs and expenditures for any facility, land, building, machinery, equipment, treatment works, sewerage or disposal systems which are acquired, constructed or installed in conformity with the purposes of NRS 445.131 to 445.354, inclusive:
11. To hold hearings, to issue notices of hearings, to issue subpenas requiring the attendance of witnesses and the production of evidence, to administer oaths, and to take testimony as the director finds necessary to carry out the provisions of NRS 445.131 to 445.354, inclusive;
12. To exercise all incidental powers necessary to carry out the purposes of NRS 445.131 to 445.354, inclusive; and
13. To delegate any function or authority granted to him under NRS 445.131 to 445.354, inclusive (N.R.S. §445.214, emphasis added).

The Director is also authorized to take any appropriate action against a pollution source when he has evidence that the pollution is presenting an imminent and substantial endangerment to the health or welfare of persons (*Nevada Water Pollution Control Regulations*, Article 3.9). Figure 1 shows the organization of the Department of Human Resources.

Figure 1. Nevada Water Quality Administration



The State Health Division is given the statutory authority to regulate sanitation and sanitary practices in the interests of the public health and provide for the sanitary protection of water and food supplies and control sewage disposal (Nevada Water Pollution Control Program Plan, FY 1975, §5.3).

The Bureau of Environmental Health is a branch of the Health Division which is a section of the Department of Human Resources. The Bureau collects water samples and performs analyses for dissolved oxygen and BOD (Nevada Water Pollution Control Program Plan, FY 1975, §7.2.2).

During 1975, the Bureau designated principle aquifers and accumulated data to develop an inventory of ground water pollution sources and a list of wells which would comprise a ground water monitoring network (Nevada Water Pollution Control Program Plan, FY 1975, §7.3.7). (This information was submitted to the Environmental Protection Agency on April 15, 1976.) The Bureau also investigates alleged violations of water pollution control statutes and regulations (Nevada Water Pollution Control Program Plan, FY 1975, §8.1).

8.2.2 Additional Agency Involvement-Department of Conservation and Natural Resources

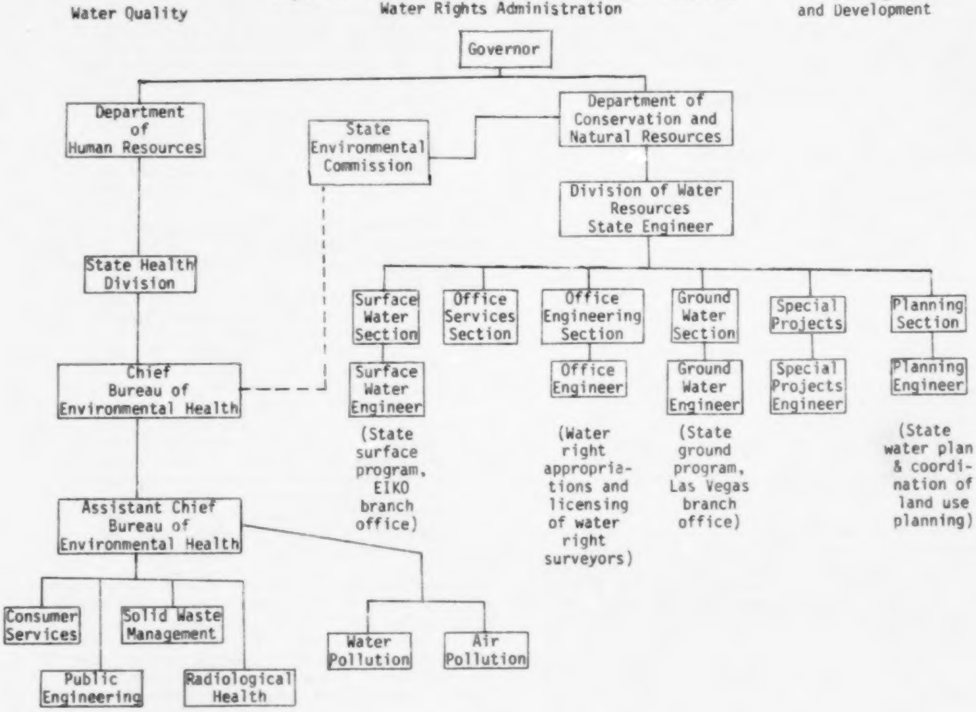
The Department of Conservation and Natural Resources has general administrative supervision over all natural resources agencies (N.R.S. §232.020). The Director of this department must coordinate all studies in Nevada that concern the supply, development, use and conservation of water (N.R.S. §232.070).

The State Engineer, who is the executive head of the Division of Water Resources, must develop a comprehensive water resource plan and review proposals from federal, state and local agencies that deal with water and flood control. Further, the State Engineer handles all applications for the appropriation of water, permits to change the place of diversion, manner or place of use, and is responsible for ensuring the proper distribution of appropriated waters (N.R.S. §533.325, .270 and §534.050). Figure 2 shows the relationship of the various agencies involved with water quantity and quality control.

The State Environmental Commission was created in 1973 as a branch of the Department of Conservation and Natural Resources to promulgate rules and regulations for the control of water pollution. The State Conservation Commission carries out the policies of Nevada in programs for the conservation of renewable natural resources and represents the state in matters affecting such resources (N.R.S. §548.175).

The Commission is composed of the following members; the Director of the Nevada Department of Fish and Game, the State Forester Firewarden, the State Engineer, the Executive Director of the State Department of Agriculture, a member of the State Board of Health, and four members appointed by the Governor.

Figure 2 Nevada Water Agencies and Major Functions


Water Quality
Water Rights Administration
Planning and Development
Governor
Department of Human Resources
State Environmental Commission
Department of Conservation and Natural Resources
Division of Water Resources State Engineer
State Health Division
Surface Water Section
Office Services Section
Office Engineering Section
Ground Water Section
Special Projects
Planning Section
Chief Bureau of Environmental Health
Surface Water Engineer
Office Engineer
Ground Water Engineer
Special Projects Engineer
Planning Engineer
(State surface program, EIKO branch office)
(Water right appropriations and licensing of water right surveyors)
(State ground program, Las Vegas branch office)
(State water plan & coordination of land use planning)
Assistant Chief Bureau of Environmental Health
Consumer Services
Solid Waste Management
Public Engineering
Radiological Health
Water Pollution
Air Pollution

The Commission must:

> (a) Develop, propose, promulgate and amend from time to time, after notice and public hearing, rules and regulations implementing and furthering the provisions of NRS§445.131 to 445.354, inclusive, including standards of water quality and waste discharge.
> (b) Advise, consult and cooperate with other agencies of the state, the Federal Government, other states, interstate agencies and other persons in furthering the provisions of NRS§445.131 to 445.354, inclusive.
> 2. In promulgating regulations, water quality standards and effluent limitations pursuant to NRS 445.131 to 445.254, inclusive, the commission shall recognize the historical irrigation practices in the respective river basins of this state, and the economy thereof, and their effects.
> 3. The commission may hold hearings, issue notices of hearings, issue subpenas requiring the attendance of witnesses and the production of evidence, administer oaths, and take testimony as it deems necessary to carry out the provisions of subsections 1 and 2 and for the purpose of reviewing water quality standards (N.R.S. §445.201).

Further, the Commission must provide an opportunity for each permit applicant, interested agency, or any person to request a public hearing with respect to each permit application (N.R.S. §445.267).

8.3 SPECIAL LEGISLATION

8.3.1 Solid Waste Disposal

While Nevada's Solid Waste Disposal legislation expressly excludes "any agricultural activity" from its requirements for a plan for a solid waste management system, this legislation does reflect the state's concern for its environment (N.R.S. §444.620).

The state's policy in regulating the collection and disposal of solid waste is one which will:

1. Protect public health and welfare.
2. Prevent water or air pollution.
3. Prevent the spread of disease and the creation of nuisances.
4. Conserve natural resources.
5. Enhance the beauty and quality of the environment (N.R.S. §444.440).

Solid waste is defined as:

> all putrescible and nonputrescible refuse in solid or semisolid form, including, but not limited to, garbage, rubbish, junk vehicles, ashes or incinerator residue, street refuse, dead animals, demolition waste, construction waste, solid or semisolid commercial and industrial waste and hazardous waste, including explosives, pathological waste, chemical waste, and herbicides or pesticide waste (N.R.S. §444.490).

The State Environmental Commission is the agency who is responsible for adopting regulations concerning solid waste management systems. However, the Department of Human Resources is designated as the state agency for such purposes as are required by the Solid Waste Disposal Act (42 U.S.C. §3251-3259, N.R.S. §444.560, .590).

8.3.2 County Sewage and Waste Water Law

The County Sewage and Waste Water Law provides that county officers must develop an areawide management plan (N.R.S. §244.9262). This plan must include a process to identify agriculturally related nonpoint sources of pollution, including runoff from manure disposal areas and from land used for livestock and crop production (N.R.S. §244.9262(f)).

8.4 RELATED LEGISLATION

The Nevada Conservation Districts Law commands the State Conservation Commission:

> To serve, along with conservation districts, as the official state agency for cooperating with the Soil Conservation Service of the United States Department of Agriculture in carrying on conservation operations within the boundaries of conservation districts ... (N.R.S. §548.175(5)).

In making a determination that a conservation district is needed, the Commission must give due weight and consideration to:

> (a) The topography of the area considered and of the state.
> (b) The composition of soils therein.
> (c) The distribution of erosion.
> (d) The prevailing land use practices.
> (e) The desirability and necessity of including within the boundaries the particular lands under consideration and the benefits such lands may receive from being included within such boundaries.
> (f) The relation of the proposed area to existing watersheds and agricultural regions, and to other conservation districts already organized or proposed for organization under the provisions of this chapter.
> (g) Such other physical, geographical and economic factors as are relevant, having due regard to the legislative determinations set forth in NRS 548.095 to 548.110, inclusive (N.R.S. §548.195).

Nevada's State Land Use Planning legislation states that there is a statewide public interest in a more efficient system of land use planning and decision-making and that:

> The rapid continued growth of the state's population, expanding urban development, increasing pressures upon natural resources, conflicts in patterns of land use, a lack of state land use policy and planning and the increased size, scale and impact of private actions have created a situation in which land use management decisions of wide public concern often are being made on the basis of expediency, tradition, short-term economic considerations and other factors which too frequently are unrelated or contradictory to sound environmental, economic and social land use considerations (N.R.S. §3210.640).

The executive head of the division of state lands of the Department of Conservation and Natural Resources must develop and carry on a statewide land use planning process which must include projections of the nature and quantity of land needed and suitable for the "conservation and preservation of natural resources, agriculture, mineral development and forestry" (N.R.S. §321.720(4)) and the preparation of an inventory of environmental, geological and physical conditions (including soil types) which influence the desirability of various uses of land (N.R.S. §321.720 (5)).

The Executive Director is commanded to "adopt a land use plan for the integrated arrangement and general location and extent of, and the criteria and standards for, the uses of land, water, air space and other natural resources within the area..." (N.R.S. §321.770). Among the goals of a comprehensive physical land use plan are those to: "preserve the quality of the air and water resources of the state and to conserve prime farm lands for the production of crops ..." (N.R.S. §378.655).

8.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

Nevada Water Pollution Control Regulations were adopted by the State Commission of Environmental Protection on November 14, 1972 and were last amended on January 25, 1975 (see Environment Reporter, State Water Laws, Vol. 2, §841.0501 to .0518).

These regulations prohibit the discharge of any pollutant from any point source into any waters of the State unless authorized by a permit which was issued by the Department of Human Resources (Nevada Water Pollution Control Regulations, Article 2.2.1, 1975).

Specifically exempted from the requirements of obtaining a permit are discharges of pollutants from agricultural activities, including irrigation return flow and runoff from orchards, cultivated crops, pastures, rangelands, and forest lands (Nevada Water Pollution Control Regulations, Article 2.2.1.1.3). This exemption does not apply to:

> Discharges from animal confinement facilities, if such facility or facilities contain, or at any time during the previous 12 months contained, for a total of 30 days or more, any of the following types of animals at or in excess of the number listed for each type of animal:
> 1,000 slaughter and feeder cattle;
> 700 mature dairy cattle (whether milkers or dry cows);
> 2,500 swine weighing over 55 pounds;
> 10,000 sheep;
> 55,000 turkeys;
> If the animal confinement facility has continuous overflow watering, 100,000 laying hens and broilers;
> If the animal confinement facility has liquid manure handling systems, 30,000 laying hens and broilers;
> 5,000 ducks.
> Discharges from animal confinement facilities, if such facility or facilities contain, or at any time during the previous 12 months contained for a total of 30 days or more, a combination of animals such that the sum of the following numbers is 1,000 or greater; the number of slaughter and feeder cattle multiplied by 1.0, plus the number of mature dairy cattle multiplied by 1.4, plus the number of swine weighing over 55 pounds multiplied by 0.4, plus the number of sheep multiplied by 0.1;
> Discharges from aquatic animal production facilities;
> Discharges of irrigation return flow (such as tailwater, tile drainage, surfaced groundwater flow or bypass water), operated by public or private organizations or individuals, if: (1) there is a point source of discharge (e.g., a pipe, ditch, or other defined or discrete conveyance, whether natural or artificial) and;
> (2) the return flow is from land areas of more than 3,000 contiguous acres, or 3,000 non-contiguous acres which use the same drainage system; and
> Discharges from any agricultural or silvicultural activity which have been identified by the Administrator or the Director as a significant contributor of pollution (Nevada Water Pollution Control Regulations, Articles 2.2.1.1.3.1 to 2.2.1.1.3.5).

8.6 CASE LAW APPLICABLE TO AGRICULTURE

The only case to reach the Supreme Court of Nevada which dealt with water pollution was the case of City of Reno v. Stoddard (40 Nev. 537, 167 P. 317, 1917). This case concerned a municipal corporation's sewage disposal fund and does not affect irrigation return flow problems.

8.7 INFORMATION SOURCES

_______, Nevada Water Quality Inventory Report, First Annual Report to the U.S. Environmental Protection Agency and the Congress, Dept. of Human Resources, April 1975.

Dunn, L. E. and Hanson, Robert A. Chemical Composition and Quality of Nevada Waters, Agricultural Experiment Station, August 1967.

Dunn, L. E. and Henson, R. A. Quality Standards of Irrigation Waters for Nevada Soils, Agricultural Experiment Station, March 1970.

_______, Water for Nevada, Vols. 1-3, Special Planning Report and Summary, 1971.

_______, Water Quality Impacts of Land Disturbing Activities, Interim Report, Prepared by Stevens, Thompson E., Ruyon, Inc., and Vasey-Scott Engineering Co., Inc., for State of Nevada, Environmental Protection Services, Department of Human Resources, Carson City, Nevada, July 1976.

APPENDIX 8-A

Class A Water Quality Standards

Item 1: Floating solids, sludge deposits, tastes or odor producing substances.
Specifications: None attributable to man's activities.

Item 2: Sewage, industrial wastes or other wastes.
Specifications: None.

Item 3: Critical materials; oils; deleterious substances; colored or other wastes.
Specifications: None.

Item 4: Settleable solids.
Specifications: Only amounts attributable to man's activities which will not make the waters unsafe or unsuitable as a drinking water source or which will not be detrimental to aquatic life or for any other beneficial use established for this class.

Item 5: pH.
Specifications: Range between 6.5 to 8.5....

Item 10: Total dissolved solids.
Specifications: Shall not exceed 500 mg/l or one-third above that characteristic of natural conditions (whatever is less).

Class B Water Quality Standards

Item 1: Floating solids, settleable solids; sludge deposits.
Specifications: Only such amounts attributable to man's activities which will not make the waters unsafe or unsuitable as a drinking water source, injurious to fish or wildlife or impair the waters for any other beneficial use established for this class.

Item 2: Sewage, industrial wastes or other wastes.
Specifications: None which are not effectively treated to the satisfaction of the Commission.

Item 3: Odor producing substances.
Specifications: Only such amounts which will not impair the palatability of drinking water or fish or have a deleterious effect upon fish, wildlife or any beneficial uses established for waters of this class....

Item 5: pH
Specifications: Range between 6.5 to 8.5

Item 6: Dissolved oxygen.
Specifications: For trout waters not less than 6.0 miligrams/liter; for nontrout waters not less than 5.0 milligrams/liter....

Item 10: Total dissolved solids.
Specifications: Shall not exceed 500 mg/l or one-third above that characteristic of natural conditions (whichever is less).

Class C Water Quality Standards

Item 1: Floating solids, settleable solids; sludge deposits.
Specifications: Only such amounts attributable to the activities of man which will not make the receiving waters injurious to fish or wildlife or impair the waters for any beneficial use established for this class.

Item 2: Sewage, industrial wastes, or other wastes.
Specifications: None which are not effectively treated to the satisfaction of the Commission.

Item 3: Critical materials; oils; deleterious substances; colored or other wastes; or heated or cooled liquids.
Specifications: Only such amounts as will not render the receiving waters injurious to fish and wildlife or impair the waters for any beneficial use established for this class.

Item 4: pH.
Specifications: Range between 6.5 to 8.5....

Item 9: Total dissolved solids.
Specifications: Shall not exceed 500 mg/l or one-third above that characteristic of natural conditions (whichever is less).

Class D Water Quality Standards

Item 1: Floating solids, settleable solids; sludge deposits.
Specifications: Only such amounts attributable to the activities of man which will not impair the receiving waters for any beneficial use established for this class.

Item 2: Sewage, industrial wastes or other wastes.
Specifications: None which are not effectively treated to the satisfaction of the Commission.

Item 3: Critical material; oils; deleterious substances; colored or other wastes; or heated or cooled liquid.
Specifications: Only such amounts as will not impair the receiving waters for any beneficial use established by the Commission.

Item 4: pH.
Specifications: Range between 6.0 and 9.0....

APPENDIX A

9. NEW MEXICO

9.1 SUMMARY OF WATER QUALITY LAWS

9.1.1 Background

The present New Mexico Water Quality Act was first adopted in 1967 (N.M. Laws 1967, ch. 190). The "Water Quality Act" has subsequently been amended in 1970, 1971 and 1973 sessions of the state legislature (N.M. Laws, 1970, ch. 64; N.M. Laws, 1971, ch. 277; N.M. Laws, 1973, ch. 326).

Although passage of the Water Quality Act predated the enactment of the New Mexico Environmental Quality Act in 1973, the former act is now a coordinate part of state legislation controlling the use of the environment. It is also interesting to note that regulation of water quality also preceded the passage of a constitutional amendment in 1971 which proclaimed the fundamental importance of the state's natural environment and charged the legislature with the duty of providing effective pollution controls (N.M. Const. Art. 10 § 21).

9.1.2 Policy

The New Mexico Water Quality Act does not contain a section which states specific state policy on water pollution. However, the act does contain an interesting section which expressly limits the scope of the act (N.M.S. § 75-39-11). This section centers on important limitations from the viewpoint of agricultural use of water. The section limits the application of the act to in any way modify vested property rights in water, prohibits the adoption of regulations which affect the use of water which is entirely confined within the boundaries of an individual's property if the water does not combine with other waters, and allows for "reasonable degradation of water quality resulting from beneficial uses" (*Ibid.*). Although water pollution is not declared to be a public nuisance per se, the act is not to be construed so as to limit actions in equity or law to suppress nuisances or abate pollution (N.M.S. § 75-39-12).

Water Quality Standards adopted pursuant to the Water Quality Act offer additional help on determining a state water control policy. The introduction to the regulations states:

> Agricultural, municipal, domestic and industrial water supply are other essential uses of New Mexico's water; however, water contaminants resulting from these activities will not be permitted to lower the quality of streams below that which is required for recreation and maintenance of a fishery, where practicable (*New Mexico Water Quality Standards*, New Mexico Water Quality Commission, August 22, 1973).

The New Mexico Water Quality Control Commission's standards announce an antidegradation policy; however, reasonable degradation will be permitted if "it is justifiable as a result of necessary economic and social development" (*Ibid.*).

The overall state policy on environmental control as stated in the New Mexico Environmental Quality Act is to:

> declare a state policy which will encourage productive and enjoyable harmony between man and his environment, promote efforts to prevent or eliminate damage to and improve the environment and biosphere and stimulate the health and welfare of man . . . (N.M.S. § 12-20-1.1).

It is unclear if such a broad statement of environmental policy is of any use in defining state attitudes on water quality control.

9.1.3 Classification of Waters

The Water Quality Act authorizes the Water Quality Commission to adopt standards for specific classes of water (N.M.S. § 75-39-4). The Commission, however, has chosen to regulate water quality according to specific geographical areas and has adopted standards for various river basins.

9.1.4 Standards

The Water Quality Commission is directed to "adopt water quality standards as a guide to water pollution control" (N.M.S. § 75-39-4 (D)). Pursuant to this authority, the Commission has adopted: (1) General Standards, which apply to all surface waters suitable for recreation and support of desirable aquatic life; (2) Salinity Standards, which are numerical measurements taken at the downstream point of the reach in question; and (3) Stream Use and Designation Standards, which apply on a basin-by-basin approach and designate which types of water use are permitted (*New Mexico Water Quality Standards*, New Mexico Water Quality Control Commission, August 22, 1973). The New Mexico Water Quality Control Commission has also prohibited the disposal of refuse in natural water courses (*Water Quality Control Commission Regulations*, § 2-201, New Mexico Water Quality Control Commission, September 3, 1973).

In the adoption of regulations for water quality standards, the Commission is given the following statutory directive:

> [to] adopt, promulgate and publish regulations as to prevent or abate water pollution in the state or in any specific geographic area or watershed of the state or in any part thereof, or for any class of waters. Regulations shall not specify the method to be used to prevent or abate water pollution, but may specify a standard of performance for new sources which reflects the greatest degree of effluent reduction which the Commission determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants . . . (N.M.S. § 75-39-4(D)).

General standards have been adopted for such factors as stream bottom deposits, floating solids, oil and grease, color, odor and taste of fish, plant nutrients, hazardous substances, radioactivity, pathogens, temperature, turbidity, salinity, and dissolved gases (*Ibid.*). Stream Use and Designation Standards determine whether the water in a particular basin is suitable for such uses as irrigation, warm or cold water fishery, livestock and wildlife watering, contact recreation and industrial water supply (Ibid.). The river basins which have had standards applied to them include the Rio Grande Basin, the Canadian River Basin, the San Juan River Basin, the Gila River Basin, the Dry Cimarron River, and the closed basin of the Rio Tularosa (Ibid.).

9.1.5 Permit System

While the Commission is not itself authorized to issue water quality permits for discharges, it is empowered to determine which individuals must obtain a discharge permit from one of the Commission's constituent agencies (N.M.S. § 73-39-4.1). The duty to issue, deny or modify a discharge permit rests with the so-called constituent agency (Ibid.). Permits issued by these agencies cannot be for terms exceeding five years (Ibid.). Under such an administrative structure it is incumbent upon the Water Quality Control Commission to (1) determine by regulation what type of activity requires a discharge permit, and (2) designate the constituent agency which will have the responsibility for issuing the permit.

The state departments and agencies which comprise the constituent agencies of the Commission are as follows:

(1) the Environmental Improvement Agency;
(2) the State Engineer and the Interstate Stream Commission;
(3) the New Mexico Department of Game and Fish;
(4) the Oil Conservation Commission;
(5) the State Park and Recreation Commission;
(6) the New Mexico Department of Agriculture;
(7) the State Natural Resource Conservation Commission;
(8) the New Mexico Bureau of Mines (N.M.S. § 75-39-2).

Administration of the rules and regulations promulgated by the Water Quality Control Commission pertaining to permitting procedures are assigned to its constituent agencies "so as to assure adequate coverage and prevent duplication of effort" (N.M.S. § 75-39-4 (E)). Any jurisdictional dispute between constituent agencies is decided by the Commission (Ibid.).

New Mexico has not adopted state regulations implementing the National Pollutant Discharge Elimination System (NPDES) (Environment Reporter, State Water Laws, vol. 2, pp. 856:0101 - 856:1010, Bureau of National Affairs, Washington, D.C., 1976). Correspondence with Mr. John R. Wright, Chief of Water Quality Division, New Mexico Environmental Improvement Agency, states that while New Mexico is attempting to cooperate with the U.S. Environmental Protection Agency in implementing the NPDES permit program, the limitation on the modification of vested water rights contained in N.M. Stat. § 75-39-11 has caused the impasse (Letter to George E. Radosevich, March 25, 1976). The New Mexico Environmental Improvement Agency has taken the following position with respect to the methodology to be used in the regulation of water quality aspects of irrigation return flow:

> It is the position of the Water Quality Division that the most suitable and equitable alternative available to the Environmental Protection Agency capable of realistically dealing with the water quality problems associated with irrigation return flow is the designation of irrigation return flow as nonpoint sources, to be dealt with under Section 208 of Public Law 92-500 (Methods of Managing Irrigation Return Flows Under Public Law 92-500, Oct. 1975).

Despite the above discussed impasse in the approach to regulation of return flow, some progress has been made in controlling return flow by state participation in the U.S. Dept. of Agriculture's Agricultural Conservation Program (ACP). The scope of this program is outlined in correspondence from Mr. Steve Reynolds as follows:

> . . . the state's participation is restricted to those community ditch systems which through organization bylaws, qualify as governmental organizations. These are commonly known as acequias. Such organizations can receive up to a 70% cost-sharing from the federal government, a 15% grant from the State Engineer, and a loan rate of 2½% interest for up to 10 years from the New Mexico Interstate Stream Commission. There is a direct benefit to irrigation return flow quality through the ACP, and the state part of the effort of the program in the sense that efforts to improve water use efficiency through canal lining and systems rehabilitation results in more efficient water use, and consequently, improved water quality (Letter to George E. Radosevich, April 9, 1976).

Although federal matching funds have not been equal to state participation, approximately 500 miles of irrigation canals have been lined under the ACP (Ibid.).

9.1.6 Sanctions and Enforcement Measures

The Commission's constituent agencies are directed to "make every reasonable effort to obtain voluntary cooperation in the prevention or abatement of water pollution" (N.M.S. § 75-39-8). In the event that voluntary compliance cannot be secured by a constituent agency, the Commission is authorized to request the State Attorney General to initiate proceedings in the district court for the county where the violation has occurred (N.M.S. § 75-39-9). The Commission may seek relief in the form of injunction and civil penalty (Ibid.). The district court can impose fines not to exceed one thousand dollars for each conviction of violation of the Water Quality Act, and each day of violation constitutes a separate offense (Ibid.).

Additional means of enforcing the act are also available. The Commission is given the option of accepting a written assurance from the party engaging in the unauthorized pollution if the assurance specifies the time within which the pollution will be discontinued (Ibid.). In the event of an emergency situation which poses a threat to human health, the Director of the Environmental Improvement Agency can issue a cease and desist order which is valid for forty-eight hours before judicial action is required (N.M.S. § 75-39-10).

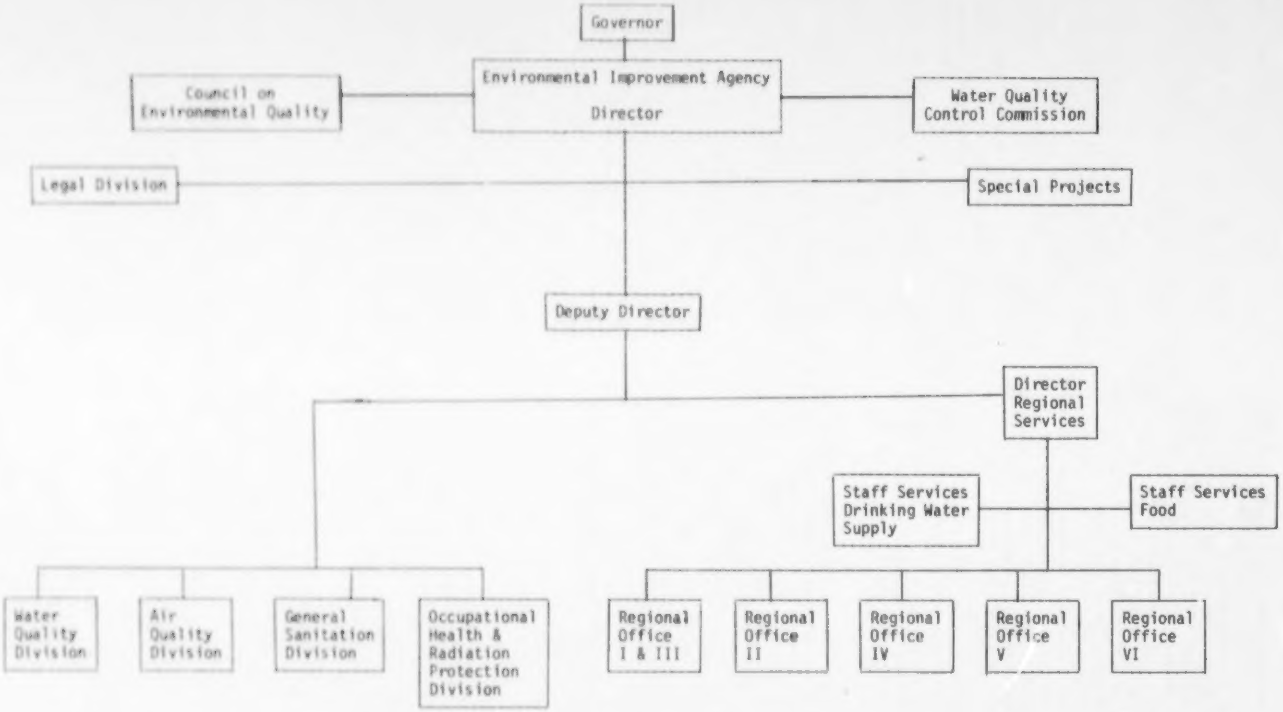
9.2 ADMINISTRATION OF THE LAWS

The following agencies are involved in the administration and implementation of New Mexico's water laws.

9.2.1 Water Quality Control Commission

As the previous discussion indicates, the Water Quality Control Commission has been delegated principal authority for water quality control in New Mexico. The nine-member Commission is composed of the chief administrative officer of each of the eight constituent agencies and an additional member

Figure 1. Organizational Chart of New Mexico Environmental Improvement Agency


Governor
Council on Environmental Quality
Environmental Improvement Agency Director
Water Quality Control Commission
Legal Division
Special Projects
Deputy Director
Director Regional Services
Staff Services Drinking Water Supply
Staff Services Food
Water Quality Division
Air Quality Division
General Sanitation Division
Occupational Health & Radiation Protection Division
Regional Office I & III
Regional Office II
Regional Office IV
Regional Office V
Regional Office VI

of the public appointed by the Governor (N.M.S. § 75-39-3). The Commission functions as the state water pollution control agency for the purposes of the Federal Water Pollution Control Act, the Water Quality Act of 1965 and the Clean Waters Restoration Act of 1966 (Ibid.).

The Commission has the authority to adopt a comprehensive water quality program; adopt water quality standards; promulgate regulations to prevent and abate water pollution; classify waters; receive and allocate funds made available by the Federal Government; and grant variances from Commission regulations (N.M.S. § 75-39-4). The Commission also assigns the responsibility for administering its regulations to the appropriate constituent agency. This places the Commission in the position of performing the function of policy making while the "line" or administrative agencies are given the authority to enforce the regulations in the generic or substantive areas for which they are responsible. The Commission also prescribes the manner in which the constituent agencies administer their permit programs (N.M.S. § 75-39-4.1).

The constituent agencies are given power to investigate sources of pollution under their jurisdiction; to recommend regulations for adoption to the Commission; and inspect pollution control equipment (N.M.S. § 75-39-8). Issuance of discharge permits is the duty of these agencies (N.M.S. § 75-39-4.1).

Application of the act and the authority of the Commission and its constituent agencies is specifically limited in certain areas. These areas include the modifications of property interest in the use of water; water which does not return to a water course; permission for reasonable degradation of water quality resulting from beneficial uses; and non-interference with the authority of the Oil Conservation Commission (N.M.S. § 75-39-11). Any person who is adversely affected by a regulation of the Commission has a direct right of appeal to the New Mexico Court of Appeals (N.M.S. § 75-39-6).

9.2.2 Environmental Improvement Agency and Council on Environmental Quality

The New Mexico Environmental Improvement Act of 1971 promoted the former Environmental Services Division of the Health and Social Services Department to full departmental status as the Environmental Improvement Agency (EIA) (Othmer and Rivera, 1973). The EIA is to function as an enforcement agency under the Act and as a constituent agency under the Water Quality Act (N.M.S. § 12-12-10 and 75-39-3). Among the operative area for which the EIA has authority, the ones more directly related to water quality control are water pollution and water supply (N.M.S. § 12-12-10 & 11). See Figure 1.

In 1973 the Environmental Quality Act was passed creating the New Mexico Council on the Environment (N.M.[illegible] § 12-20-1 et. seq.). The Council acts as an ov[illegible]t body which is to recommend environmental improvements or management practices; administrative changes and organizational alignments; and budgetary requirements to implement legislative and administrative action (N.M.S. § 12-20-4). The legislature further provided in the Environmental Quality Act for specific guidelines for interpretation and administration of laws and regulations which concern environmental protection (N.M.S. § 12-20-6). Briefly, these guidelines include the following:

(1) use of a systematic and interdisciplinary approach in planning and making environmental decisions;

(2) consultation with the Council on Environmental Quality to ensure that all social and economic values have been considered;

(3) environmental impact statements of major state actions which will significantly affect the human environment (N.M.S. § 12-20-6).

Effective May 15, 1974, the Act was repealed, abolishing the environmental impact statement requirement and the Council on Environmental Quality (Envir. Reporter, Current Developments, Vol. 4, No. 46, Mar. 15, 1974, p. 1902).

9.2.3 Office of the State Engineer

The State Engineer is the principal officer charged with administration of water rights in New Mexico. The State Engineer has general supervision, measurement, appropriation and distribution powers over the waters of the state (N.M.S. § 75-2-1, 75-2-9). Finally, the State Engineer has the power to refuse any proposed appropriation of surface waters if approval would be contrary to the public interest (N.M.S. § 75-5-5, 75-5-6). See Figure 2.

In its 1976 session, the New Mexico Legislature adopted enabling legislation which allows the State Board of Finance to sell bonds under the Severance Tax Bonding Act for the purpose of making matching funds available under the Federal Water Pollution Control Act for the construction of sewage treatment facilities (N.M.S. § 72-18-37.29). The Finance Board can issue up to $3,267,000.00 in bonds for this program when the Water Quality Control Commission certifies that the need exists (Ibid.).

This type of financing is also available for the purposes of the New Mexico Water Supply Construction Act (N.M.S. § 72-18-37.31). The Construction Act was passed to finance local water supply facilities, and when the Environmental Improvement Board certifies the need for the issuance of the bonds, the state Finance Board can issue up to $2,475,000 in Severance Tax Bonds (Ibid.).

9.4 RELATED LEGISLATION

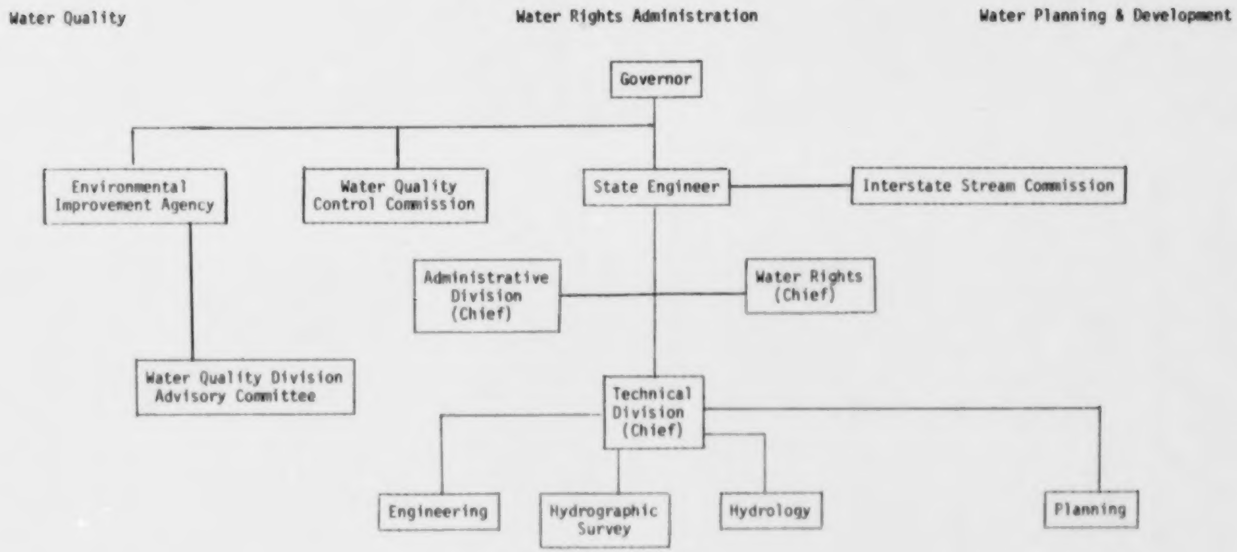
9.4.1 Special Purpose Districts

There are a number of special purpose districts in New Mexico which have some responsibility for the use and conservation of water resources. These districts include Water and Sanitation districts (N.M.S. § 75-18-1 et. seq.); Drainage Districts (N.M.S.§75 arts 19, 20, and 21); Irrigation Districts (N.M.S. § 75 arts 22, 23, 24, 25, 26, and 27); Conservancy Districts (N.M.S. § 75 arts 27, 28, 29, 30, 31, and 32); and Artesian Conservancy Districts (N.M.S. § 75-13-1 et. seq.). None of the above districts is expressly given any statutory authority over water quality control.

9.4.2 Acequias and Water User Associations

Enabling legislation has been enacted for the formation and operation of Community Ditches or Acequias (N.M.S. § 75-14-1 et. seq.) and Water User Associations (N.M.S. § 75-17-1 et. seq.). Both organizations are intended to operate as entities which supply water to its users, primarily for the purpose of irrigation and have not been delegated any express duties for water quality control.

Figure 2. New Mexico Water Agencies and Their Functions


Water Quality
Water Rights Administration
Water Planning & Development
Governor
Environmental Improvement Agency
Water Quality Control Commission
State Engineer
Interstate Stream Commission
Administrative Division (Chief)
Water Rights (Chief)
Water Quality Division Advisory Committee
Technical Division (Chief)
Engineering
Hydrographic Survey
Hydrology
Planning

9.4.3 Water Supply Construction Act

The Water Supply Construction Act was passed to provide financial assistance to local governments for the construction of water supply facilities (N.M.S. § 75-41-2 et. seq.). Financing is in the form of grants or loans made from funds derived from the sale of Severance Tax Bonds (Ibid.).

9.4.4 Water Research, Conservation and Development Act

This act was passed for the purpose of providing "solutions to water shortage, conservation and utilization problems through research, conservation or development projects for the benefit of the citizens of New Mexico" (N.M.S. § 75-42-1 et. seq.). Funds for the Act are provided from the severance tax income fund and are under the administration of the Interstate Stream Commission (Ibid.).

9.4.5 Interstate Stream Commission

The Interstate Stream Commission has been delegated specific responsibilities relating to interstate water in which the State of New Mexico has an interest (N.M.S. § 75-34-1 et. seq.). The Commission is authorized to negotiate compacts with other states for the equitable division of waters in interstate streams. The Commission can also cooperate with the Federal Government in financing the development of interstate waters (Ibid.). Although the Commission is not given specific duties in the area of water quality control, it would be governed by those environmental policies announced in the Environmental Quality Act (N.M.S. § 12-20-6).

9.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

9.5.1 Agriculture Generally

At the time of this report, the New Mexico Water Quality Control Commission has not adopted any regulations concerning the use of water for agricultural purposes. It should be noted that while the New Mexico Water Quality Act does not absolutely prohibit such regulation, the limitations contained in N.M. 75-39-11 pose difficult problems in construing legislative intent in this area.

9.5.2 Irrigation Return Flow

No state regulations on agricultural return flow have been adopted by the Water Quality Control Commission. In one report, the Commission has taken the following position on the subject:

> Until regulations are published in the Federal Register regarding irrigation return flows, the Environmental Improvement Agency will include these drains in the general agricultural category to be considered during the continued planning process as a nonpoint source of pollution. (Lower Rio Grande Basin Plan, New Mexico Water Quality Control Commission, September, I-4, 1975).

The above statement, when taken with the earlier discussion on implementation of the NPDES, implies that there will be little state leadership in New Mexico on regulating irrigation return flow.

The New Mexico Water Quality Control Commission has the authority under the state water quality act to implement the planning program for water quality as specified in Section 208 of the Federal Water Pollution Control Act of 1972. Section 208 is primarily concerned with areawide wastewater treatment and non-point sources of pollution. Since New Mexico contends that irrigation return flow should be managed as a non-point source of pollution, the state's planning approach in implementing Section 208 water quality planning should be of interest. The following statement is taken from the most recent report of the New Mexico Water Quality Control Commission:

> The Commission will incorporate relevant local plans and policies in its water quality management planning, including those affecting present and future land use. Throughout the planning process, instream and ground water quality will be analyzed and, when it is documented that present or probable land uses significantly impact water quality or will significantly impact water quality, alternative engineering, land use management and regulatory approaches to preventing water pollution in these specific areas will be reviewed (The State of New Mexico Continuing Planning Process for Water Quality Management, p. 23, New Mexico Water Quality Control Commission, March, 1976).

The above statement indicates that should monitoring of water quality parameters reveal that irrigation return flow, as a non-point source of pollution, pose a threat of significant impact on water quality that the Commission would place a regulatory restriction on water use.

9.6 CASE LAW APPLICABLE TO AGRICULTURE

9.6.1 Water Quality Act

The New Mexico Water Quality Act has been before the State Supreme Court in the cases of State of New Mexico v. Arizona Public Service Company (85 N.M. 165, 510 P.2d 98, 1973); City of Roswell v. New Mexico Water Quality Control Commission (84 N.M. 561, 505 P.2d 1237, 1973); and New Mexico Water Quality Control Commission v. City of Hobbs (86 N.M. 444, 525 P.2d 371, 1974). Although none of the above cases have dealt with the issue of agricultural pollution, they are illustrative of the method in which the New Mexico Court has approached the operation of the Water Quality Act.

In State of New Mexico v. Arizona Public Service Company, involving injunctive relief to abate alleged public nuisances caused by the operation of the Four Corners Power Plant, the Court noted that plaintiff's claim relating to mercury emissions as a source of water pollution were controlled by the operation of the New Mexico Water Quality Act of 1967 (510 P.2d 98, 100). As the agency had not adopted control standards for mercury emissions, the Court declined to substitute its judgment for that of the Water Quality Control Commission and entered no finding on the issue (5.0 P.2d, 90, 105). This position indicates that the Court will not exercise its discretion in the area of pollution standards when the agency statutorily responsible has not addressed itself to the problem in the form of regulations.

The issue on the City of Roswell was whether the Water Quality Control Commission as an environmental protection agency was exempt from the provisions of the New Mexico Environmental Quality Act which required that state agencies consider the impact that agency action has on the environment in adopting regulations. The Court found that the Commission's role in protection of the environment did not exempt it from compliance with the Environmental Quality Control Act (505 P.2d 1237, 1240).

In City of Hobbs, the Court found that the Commission had the authority to require that the city furnish free hook-ups and meter connections to the potential users along the water lines, stop discharging effluent at the present location, and improve the quality of the effluent. The court further found that the city was negligent in the operation of its sewage treatment plant and that it was strictly liable for damages caused by operation of the plant (525 P.2d 371, 373).

9.6.2 Irrigation and Water Quality

In respect to a water quality component for an appropriative right one commentator has stated:

> As a general principle, the appropriator is entitled to the flow of water in the stream to his diversion works in such state of natural purity as to substantially fulfill the purposes for which his appropriation was made. If not protected in this particular [aspect], the usefulness of his water right may be depreciated or even destroyed (Hutchins, Water Rights Laws in the Nineteen Western States, Vol. I, pp. 448, USDA Misc. No. 1206, 1971).

Although the above rule has not been as succinctly stated in decisions rendered by the New Mexico Supreme Court, there are some decisions which are supportive of the principle.

First, the Court has recognized that while an appropriator is entitled to his beneficial use requirements, he is not allowed to waste water. This rule was announced in the case of Snow v. Abalos, 18 N.M. 681, 140 P. 1044 (1914), where an action was brought to adjudicate the rights for the Elephant Butte Irrigation Project. The Court found that where the water was administered by a community acequia, the individual appropriator did not have the right to waste water (140 P. 1044, 1049).

Snow was cited as authority for the court's holding in the more recent case of Worley v. United States Borax and Chemical Corp., 78 N.M. 112, 428 P.2d 651, 1967. In the Worley case the plaintiff, a downstream senior appropriator, brought an action for damages suffered to crops due to insufficient water reaching his point of diversion against upstream junior users. Although the case was decided against the senior because he had failed to demand the quantity of water to which he had a vested right, the case is of interest from the standpoint of water quality being a component of the appropriative right, because the plaintiff expressly contended, "AS SENIOR APPROPRIATOR PLAINTIFF IS ENTITLED AS AGAINST ALL SUBSEQUENT CLAIMANTS TO THE EXCLUSIVE USE OF THE WATER TO THE EXTENT OF HIS APPROPRIATION WITHOUT DIMINUTION OR MATERIAL ALTERATION IN QUANTITY OR QUALITY" (428 P.2d 651, 653). The discussion of this contention by the Court is notable because the Court devoted considerable discussion to the quantitative aspect of plaintiff's right without addressing any dicta to the qualitative point. Therefore, the issue of the water quality nature of a water right can only be seen as an open question in New Mexico.

On a more positive point, it is settled law in New Mexico that an irrigator is liable for injuries inflicted by the willful or negligent use of water. This point is demonstrated by Stroup v. Frank A. Hubbell Co. (27 N.M. 35, 192 P. 519, 1920), where defendant willfully drained excess water containing alkali salts onto plaintiff's crops. This case provides some support for the position that an irrigator who alters water quality to the detriment of other users will be liable to those users for the damage his water management practices have caused whether they are willful or negligent.

The New Mexico Court has also had occasion to consider the validity of applications to supplement surface water rights with water supplies from ground water from the same basin aquifer which feeds the river. This issue has been discussed in Durand v. Reynolds (75 N.M. 497, 406 P.2d 817, 1965); and Langenegger v. Carlsbad Irrigation Dist. (82 N.M. 416, 483 P.2d 297, 1971). In the Durand case, the Court upheld the refusal of the State Engineer to grant the permit because substantial injury to existing surface rights would result.

A similar result was reached in Langenegger where senior appropriators whose flows had been reduced by withdrawals from the ground water basin aquifer were allowed to supplement their rights by ground water withdrawals which did not constitute a grant of a new appropriation. Both cases demonstrate judicial protection of established surface rights in a situation where conjunctive management of surface and ground water appropriations are affecting the same ground water basin.

9.7 INFORMATION SOURCES

Othmer, Craig T., and Rivera, Henry M., "On Building Better Laws for New Mexico's Environment," 4 N. Mex. L. Rev., 105 (1973).

Walterschied, Edward C., et al., "Control of Industrial Water Pollution in New Mexico," 9 Nat. Res. J. 629 (1969).

____________, Methods of Managing Irrigation Return Flows Under Public Law 92-500, New Mexico Environmental Improvement Agency, Water Quality Div., presented at U.S. E.P.A. hearing at Denver, Colorado, Oct. 1975.

____________, The State of New Mexico Continuing Planning Process for Water Quality Management, New Mexico Water Quality Control Commission, March 1976.

____________, Water Quality in New Mexico, New Mexico Water Quality Control Commission, May 1975.

____________, Lower Rio Grande Basin Plan, New Mexico Water Quality Control Commission, Sept. 1975.

APPENDIX A

10. NORTH DAKOTA

10.1 SUMMARY OF WATER QUALITY LAWS

10.1.1 Background

Legislation protecting the quality of public waters from refuse, petroleum products and livestock waste was enacted before the turn of the century in North Dakota (N.D.C. §§ 61-01-12 to 61-01-14). This early legislation has since been repealed following the passage of more comprehensive legislation (Repealed by S.L. 1975, ch. 106, § 673).

The first comprehensive water quality legislation was passed in 1967. The title of the act is expressly directed at the water quality problems of surface water supplies. However, it is clear from the body of the legislation that the act was not intended to function in such a limited fashion. As one commentator has noted, "For example, 'Waters of the State' are defined to include 'all other bodies or accumulations on or under the surface of the earth'" (Beck, 1972).

The act created a State Water Pollution Control Board consisting of 10 members representing various State departments and private interest groups (N.D.C. § 16-28-03). The board may, in conjunction with the North Dakota Department of Health, and after notice and public hearing, adopt standards of water quality and fix a reasonable time for compliance with these standards (N.D.C. § 61-28-05).

10.1.2 Policy

The policy announced in the legislation is stated as follows:

> It is hereby declared to be the policy of the state of North Dakota to act in the public interest to protect, maintain, and improve the quality of the waters in the state for continued use as public and private water supplies, propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, recreational and other legitimate beneficial uses, to require necessary and reasonable treatment of sewage, industrial, or other wastes and to cooperate with other agencies in the state, agencies of other states and the federal government in carrying out these objectives (N.D.C. § 61-28-01).

Further articulation of state policy is found in the first section of the North Dakota State Department of Health's Standards of Surface Water Quality for State of North Dakota. This statement of administrative policy states that the standards will be administered to maintain and improve the quality of water as it existed as a matter of record when the first standards were established in 1967, or later if records indicate an improved quality of water (Standards of Surface Water Quality State of North Dakota, § I, North Dakota Dept. of Health, 1973). Degradation of water quality will only be approved in those situations where it can be "affirmatively demonstrated that a change in quality is justifiable to provide necessary economic and social development and will not adversely affect the stated beneficial uses of the water" (Ibid.).

10.1.3 Classification

The regulations which have been jointly adopted by the Department of Health and the Water Pollution Control Board establish four stream classifications which are summarized as follows:

Class I	Water of such quality as to permit the propagation of fish, swimming, irrigation, stock watering and wildlife use without injurious effects. Specific chemical criteria are also listed.
Class IA	Water of such quality to permit the uses in Class I, except that treatment for municipal use may also require softening to meet the chemical requirements for the Department of Health.
Class II	Primarily a classification for streams which have low or no-flow periods, quality must be such as to permit uses in Class I, except that treatment to remove dissolved solids and meet chemical requirements of the Department of Health.
Class III	Also a classification for intermittent streams, and which, due to these factors have questionable value for beneficial use during periods of low or no-flow. Water quality for Class I uses is specified, except that saline water treatment is required (Standards of Surface Water Quality State of North Dakota, §VI North Dakota Dept. of Health, 1973).

State standards also list the classifications under the above system, which have been given to more important river basins, subbasins, and tributaries in North Dakota (Ibid., § VIII). Water courses which are not listed in this tabulation are governed in accordance with Section VI, General Conditions, of the Standards (Ibid.).

10.1.4 Stream and Discharge Standards

In addition to classification based on suitability for specific beneficial uses as discussed in the preceding section, stream classification is a function of standards for dissolved mineral salts, fecal coli, coliform, turbidity, color, pH, dissolved oxygen, temperature and radiological criteria (Standards of Surface Water Quality State of North Dakota, § VI, North Dakota Dept. of Health, 1973). Specific limitations for each criterion have been established by the Department of Health and are listed for each of the classes I, IA, II, and III (Ibid.).

10.1.5 Permit System

The Department of Health is given the authority to make rules governing the application for discharge permits and to regulate the issuance, denial, modification or revocation of permits (N.D.C. § 61-28-04 (18) and (19)). Briefly, a permit from the Department is required for the discharge of wastes due to the following activities:

(1) construction and operation of any disposal system not previously approved by the Department and the State Water Commission;
(2) an increase in the strength or volume of waste discharged from a previously approved facility;
(3) construction and operation of an industrial establishment which would discharge wastes that would alter water quality parameters;
(4) construction or use of any new outlet for the discharge of wastes into state waters (N.D.C. § 61-28-06).

A review of the regulations of the North Dakota State Department of Health does not show that the Department has adopted or proposed specific regulations governing waste discharge permits. However, North Dakota adopted the National Pollution Discharge Elimination System (NPDES) in July, 1975.

10.1.5 Sanctions and Enforcement Measures

The North Dakota act provides for both civil and criminal penalties for violation of its provisions. The range of these penalties are summarized as follows:

> Willful Violations $25,000 per day of violation, or imprisonment in county jail for one year, or both. Penalty is doubled for repeat offenders.
>
> False Statements on Applications and Reports $10,000 or imprisonment in county jail for six months or both, for knowingly made misrepresentations.
>
> Violation of Permit Conditions or Department Order $10,000 per day of violation (N.D.C. § 61-28-08).

The Department is also authorized to maintain an action for injunctive relief in the name of the state against a party which is in violation of the statute or departmental regulation (Ibid.).

The Department can also maintain an action for damages, in cooperation with other departments, for injury which results from violations of the provisions of the water quality act (N.D.C. § 61-28-04 (24)).

The Department of Health is given the authority to enforce the provisions of the Act and its own administrative rules by issuing administrative orders prohibiting or abating waste discharges (N.D.C. § 61-28-04 (7)). Such actions must be according to the "Administrative Agencies Practice Act" (N.D.C. § 61-28-07).

In 1975, the North Dakota Legislature enacted legislation known as the North Dakota Environmental Law Enforcement Act of 1975. This Act gives the State Attorney General the authority to enforce any state environmental statute, rule, or regulation (N.D.C. § 32-40-05). Environmental statute, rule, or regulation is defined as meaning:

> . . . any statute, rule, or regulation of the state for the protection of the air, water, and other natural resources, including but not limited to land, minerals, and wildlife, from pollution, impairment, or destruction (N.D.C. § 32-40-03 (2)).

The Act also allows state agencies, other political subdivisions, and persons aggrieved by the violation of state environmental laws to bring an action in district court for the enforcement of the law and recovery of damages (N.D.C. § 32-40-06). However, no damages can be recovered from a governmental subdivision (Ibid.). The court can order the complainant to post up to a five hundred dollar bond and costs can be awarded to the defendant if the suit is found to have been frivolous (N.D.C. §§ 32-40-08 and 32-40-10).

10.2 ADMINISTRATION OF THE LAWS

Several agencies are involved in the implementation and administration of North Dakota water laws.

10.2.1 Water Pollution Control Board--Department of Health

The Water Pollution Control Board consists of ten members including the heads of the Departments of Health, Water Conservation, Game and Fish, the State Geologist, one member each representing municipal, industrial and wildlife interests, and three members representing agricultural interests (N.D.C. § 61-28-03). Non-agency members are appointed by the Governor (Ibid.). The Chief Sanitary Engineer of the Department of Health serves as the Executive Secretary of the Board (Ibid.). The Board functions as a policy review body in the formulation of rules and regulations governing the control of water quality (N.D.C. § 61-28-05).

The supervision, administration, and enforcement of water quality legislation and regulation is delegated to the North Dakota Department of Health (N.D.C. § 61-28-04). The Department has the power and duty to develop a comprehensive program for the prevention, control and abatement of new or existing pollution; to accept and administer loans and grants from the Federal Government; to require the submission of plans and specifications for the construction or extension of disposal systems, and to require the proper maintenance and operation of such systems once constructed (N.D.C. § 61-28-04). The Department is organized into several divisions, with the Water Quality Control Section of the Division of Environment responsible for water pollution control activities (See Figure 1).

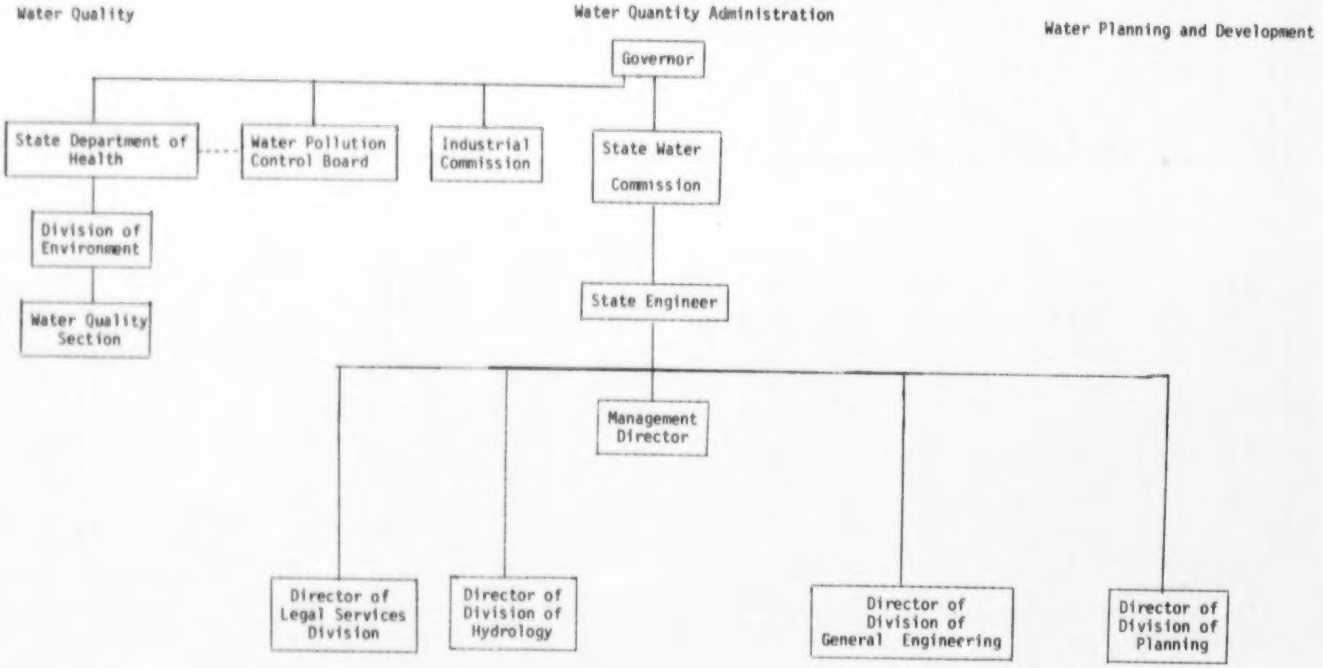
Adoption of agency rules requires a joint public hearing with the Water Pollution Control Board following publication of notice (N.D.C. § 61-28-05). All hearings for rule making or contested cases are governed by the Administrative Agencies Practice Act (N.D.C. § 61-28-07).

10.2.2 State Water Commission

Among the powers and duties of the Water Commission which are listed by statute is the power "to provide sufficient water flow for the abatement of stream pollution" (N.D.C. § 61-02-14). The Commission is also authorized to cooperate with agencies of the Federal Government in the "prevention of water pollution" (N.D.C. § 61-02-24).

Originally, the Commission was limited in their authority to declare waters to be polluted without a finding to that effect first being made by the Department of Health; however, that statute was repealed in 1975 and the Commission has more latitude in the area of water quality control (N.D.C. §61-02-15, Repealed by S.L. 1975, ch. 575, §2).

Figure 1. Water Agencies and Their Major Functions


Water Quality
Water Quantity Administration
Water Planning and Development
Governor
State Department of Health
Water Pollution Control Board
Industrial Commission
State Water Commission
Division of Environment
Water Quality Section
State Engineer
Management Director
Director of Legal Services Division
Director of Division of Hydrology
Director of Division of General Engineering
Director of Division of Planning

The primary function of the Water Commission is over the allocation of water. It is the policy body and appoints the State Engineer, who is also the Secretary to the State Water Commission. The State Engineer's primary duties include: allocating water and adjudicating water rights subject to Commission approval (N.D.C. § 61-02-30). In allocating water under a permit for agriculture, the State Engineer must make a determination of the amount of water needed according to water availability and soil type (N.D.C. § 61-14-03).

10.2.3 Industrial Commission

The Industrial Commission has control over pollution to ground water supplies caused by wastes from oil and gas production (N.D.C. § 38-08-04, 1960). Public concern over the quality of ground water supplies was developed in a series of state-wide community water conferences sponsored by the North Dakota Water Resources Research Institute, Fargo, North Dakota (Beck, 1972, p. 14).

10.3 SPECIAL LEGISLATION

10.3.1 Drainage Permits

A permit issued by the Water Conservation Commission and approved by the board of commissioners of the local water management district is required prior to draining water from any impoundment comprising forty acres or more into a natural water course (N.D.C. § 61-01-22). The permit holder is statutorily liable for any damages caused by such drainage. Rules and regulations governing the drainage of such ponds were adopted on 27 September 1976 and became effective 1 November 1976 (R61-01-22.1 to -22.16).

10.3.2 Garrison Diversion Conservancy District

This district functions as a state corporation and was created in 1955 to supervise the operation of the Garrison Diversion Project in North Dakota which covers 25 counties (N.D.C. § 61-24-02, 1960). The District is governed by a board of directors which are elected to office (N.D.C. § 61-24-03, 1960). The District is authorized to exercise the power of eminent domain and financing is provided by tax levy (N.D.C. § 61-24-08, 1960).

10.4 RELATED LEGISLATION

10.4.1 Water Management Districts

A 1973 amendment to the section of statutes creating Water Management Districts placed all the land in North Dakota within a district as of July 1, 1974 (N.D.C. § 61-16-05). Those areas not in previously established districts were organized into districts formed by action of the Water Conservation Commission (*Ibid*.).

District board of commissioners are given broad powers to plan for and control the conservation and use of water resources in their respective districts (N.D.C. § 61-16-11). The commissioners are specifically empowered to "prevent the pollution, contamination or other misuse of the water resources . . . included within the district" (*Ibid*.).

General operation and special improvements are financed by the levy of special assessments and the issuance of bonds (N.D.C. § 61-16-21). Districts can also enter into cost-sharing agreements with the Federal Government (N.D.C. § 61-16-19).

10.4.2 Irrigation Districts

An extensive body of law is concerned with the organization, government, fiscal management, and boundaries of irrigation districts in North Dakota. Briefly, formation is accomplished by submission of a petition to the State Engineer who authorizes an election for approval of the district and issues an order creating the district (N.D.C. §§ 61-05 to 21, 1960). Government of the district is performed by an elected board of directors (N.D.C. §§ 61-06-01 to 04, 1960).

Irrigation districts are given the power to construct irrigation works, deliver water and perform other necessary functions (N.D.C. §§ 61-07-01 to 33, 1960). Financing is handled through the issuance of revenue and assessment bonds which are approved for offer by a special bond election (N.D.C. §§ 61-08-01 to 40, 1960).

10.4.3 Drainage Projects

Drainage activities (such as the improvement of drains, channelization of streams, construction of levees and dikes) in North Dakota is undertaken on the county level (N.D.C. § 61-21-02, 1960). The board of county commissioners appoints a board of drainage commissioners to control the operation of the drainage project (N.D.C. § 61-21-03, 1960). The cost of providing drainage is assessed against those lands which are benefited (N.D.C. § 61-21-20, 1960).

10.4.4 Water Conservation Bonds

The State Water Commission is authorized to issue up to three million dollars in revenue bonds for the purpose of financing the cost of further irrigation development (N.D.C. § 61-02-46). The maturity date for the bonds, their denomination and rate of interest are to be determined by the Commission (N.D.C. §§ 61-02-47 to 48).

10.4.5 Natural Resources Development Bonds

This legislation was enacted after state electors had adopted a constitutional provision enabling the state to undertake natural resource development (N.D.C. ch. 21-11 and N.D. Const. art. 76). The stated purpose of the statute is to provide "a source of low cost power in order to promote economic growth, development of natural resources and prosperity and welfare of the people" (*Ibid*.).

10.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

10.5.1 Agriculture Generally

The regulations of the Department of Health define water for "Agricultural Uses" as meaning, "Water suitable for irrigation, stock watering, and other farm uses, but not as a source for domestic supply for the farm unless satisfactory treatment is provided" (*Standards of Surface Water Quality State of North Dakota*, § II, North Dakota Dept. of Health, 1973). "Pollution" is defined to include any substances which are likely to create a nuisance or to be detrimental to beneficial uses of water, including agricultural (*Ibid*.).

In 1971, the Department turned its attention to feedlot runoff (North Dakota Dept. of Health, *Rules and Regulations for the Control of Pollution from Certain Livestock Enterprises*, Reg. No. 61-28, 1972). Such runoff is considered to be one of the major sources of water pollution in agricultural states such as North Dakota (Hines, 1970). Under these regulations, livestock feeding operations must have their waste disposal methods approved by the State Department of Health.

10.5.2 Irrigation Return Flow

The State Department of Health does not have regulations which specifically address the issue of agriculture return flow as a water quality problem. However, nothing in statute or regulation appears to prevent the adoption of such regulations. Furthermore, Department regulations have focused on the issue of salinity in the following manner:

> High salinity (total dissolved solids) is recognized as a significant water quality problem which often causes adverse physical and economic impacts on water users. High salinity is recognized as a problem in many streams and rivers in the State. The Department will continue to cooperate with other State and Federal agencies in determining problem areas and salinity reductions through improved water management and conservation practices.
>
> The Department will take such steps as may be economically and technically feasible to control specific controllable sources by use of the antidegradation policy set forth in these standards (Standards of Surface Water Quality State of North Dakota, § VII, North Dakota State Department of Health, 1973).

Such a recognition of the problem of salinity by the Department certainly leaves the "door open" to the possibility of controls on irrigation return flow.

Finally, correspondence with the State Water Conservation Commission reveals that that agency has no rules or regulations on agricultural return flow (letter from Murray G. Sagsveen, Director of Legal Services, dated April 5, 1976).

10.6 CASE LAW APPLICABLE TO AGRICULTURE

No cases have been reported at this time which involve the activities of the State Department of Health and the Water Pollution Control Board.

There is no case law which relates to other aspects of water quality. No cases construing an appropriative right to have a quality component are reported. Further, although the basic irrigation code following the appropriation doctrine was adopted in 1905, it was not until 1968 that the validity of the appropriation was tested in the case of Baeth v. Hoiseen, 157 N.W. 728 (N.D. 1968). The issue in Baeth was whether an overlying landowner has a vested right to unused ground water for irrigation purposes without applying to the State Engineer for a permit. The court upheld the statutory scheme for appropriation by the earliest permittee and that the landowner had no vested right in the ground water.

10.7 INFORMATION SOURCES

Ayres, E. Kent, and Robert E. Beck, "Water Management Districts in North Dakota," 48 N.D.L. Rev. 361 (1972).

Bard, Dean F., and Robert E. Beck, "An Institutional Overview of the North Dakota State Water Conservation Commission: Its Operation and Setting," 46 N.D.L. Rev. 31 (1969).

Beck, Robert E., "A Survey of North Dakota Environmental Law," 49 N.D.L. Rev. 1 (1972).

Beck, Robert E., and John C. Hart, "The Nature and Extent of Rights in Water in North Dakota," 51 N.D.L. Rev. (1974).

Beck, R. E., and R. A. Newgreen, "Irrigation in North Dakota Through Garrison Diversion: An Institutional Overview," 44 N.D.L. Rev. (1968).

Hines, N. William, "Agriculture Unseen Foe in War on Pollution," 55 Cornell L. Rev. 740, 1970.

Hill, Vance K., "Ground Water: What is the Law in North Dakota?" 37 N.D.L. Rev. 260 note (1960).

____________, Standards of Surface Water Quality, North Dakota Department of Health, 1973.

APPENDIX A

11. OKLAHOMA

11.1 SUMMARY OF WATER QUALITY LAWS

11.1.1 Background

The nature and extent of the water pollution problem is a multifaceted and fascinating study. Questions dealing with the character of water resources relate to the quantity, quality and availability of water. These factors determine the amount of water that can be used, the capability of lakes and watercourses to accept the burden of pollutants and the needs for reusing water. In Oklahoma, the quality of water varies greatly and natural pollution causes much of the available waters to become unsuitable for use (Pyle, p. 319, 1969).

Early attempts to control the quality of waters failed to develop any comprehensive statutory controls to prevent pollution. Individuals had to seek relief through an action for damages or the acquisition of an injunction. Early statutes came into play only when particular acts of pollution became so common and flagrant that public opinion was aroused. These acts carried small fines and were strictly remedial in their effect (See 21 Okla. Stat. § 1194, 1961, 29 Okla. Stat. § 409, 1961, and 51 Okla. Stat. § 296, 1961, as examples). One must still rely upon a private settlement with a polluter or litigation to obtain financial redress even though he can look to the state agencies for abatement.

The pollution of waters can result in injuries to land and chattels, interference with water use, or interference with the use and enjoyment of land. These distinctions must be drawn in order to determine what cause of action exists and the relevant factors in seeking recovery for injuries.

When the pollution interferes with the rights to water use, the action must be based on the parties' water rights and therefore requires the consideration of these rights. Injury to, or the interference with, the use and enjoyment of land and chattels is governed by tort law. When the polluted waters have physically entered the plaintiff's land and caused an interference with the possession or condition of the land or the chattels, the proper remedy is a trespass action. Nuisance becomes the proper remedy when the polluted waters have interfered with the use and enjoyment of the land, but have not actually entered upon the plaintiff's land. However, a defendant's act of polluting must have been intentional, negligent, or fall under a strict liability theory (Pyle, 1969). Furthermore, the plaintiff must show a connection between the act of pollution and the alleged injury (*Prest-O-Lite Co. v. Howery*, 169 Okla. 408, 37 P.2d 303, 1934).

The enactment of the Oklahoma Water Pollution Control Act of 1955 paved the way for a comprehensive state administrative program (Laws 1955, p. 476, § 1, emergency effective June 7, 1955, Renumbered by laws 1968, c. 263 § 4, emergency effective April 29, 1968, Repealed by laws 1972, c. 242, § 14, see now, O.S.A. 82 § 926.1 to 926.13, Supp. 1976). This act provided that:

> . . . no waste be discharged into the waters of the state without first being given the degree of treatment necessary to protect the legitimate beneficial uses of such waters . . . (O.S.A. 82 § 902, 1961, See now, 82 § 926.2).

Furthermore, it was the declared policy of the act to provide for the prevention, abatement, and control of any new or existing water pollution (*Ibid.*). This act also established that it was a misdemeanor and a public nuisance to pollute any waters of the state (O.S.A. 82 § 911, 912, 1961).

The Oklahoma Water Resources Board was created in 1957 (O.S.A. 82 § 1071-1084, 1961, 82 § 926.3, 1972, 1976 Supp.). This Board took over the duties of the State Planning and Resources Board, who had been responsible for the planning, financing and enforcing of the Pollution Control Act (O.S.A. 82 § 1073, 1961, 82 § 926.3, 1976 Supp., See also 82 § 904, 1961).

In response to the Federal Water Quality Act of 1965 (79 Stat. 903), the Governor created the Oklahoma Water Quality Coordinating Committee to establish water quality criteria. This Committee established water quality standards for each enforcement agency so that they could determine the existence of pollution.

The Pollution Control Coordinating Act of 1968 created the Department of Pollution Control (O.S.A. 82 § 931-939, 1971 Supp.). The Department consists of the Pollution Control Coordinating Board and any special task forces it designates as such. This Board has assumed the broad planning and policy determination duties which were originally given to the Water Resources Board. Basically, the Pollution Control Coordinating Board must maintain a surveillance of all the state's waters, control water quality, and prevent and abate pollution (O.S.A. 82 § 932). (The Water Resources Board and the Pollution Control Coordinating Board will be discussed in greater detail in section 11.2.)

As of September 10, 1976, Oklahoma has not been accepted into the NPDES program by the Environmental Protection Agency (See *Environment Reporter*, Current Developments, 1971-1976).

11.1.2 Policy

The state of Oklahoma enacted water pollution legislation in part because it recognized the fact that the pollution of state waters "constitutes a menace to public health and welfare, creates a public nuisance, is harmful to wildlife, fish and aquatic life, and impairs legitimate beneficial uses of water" (O.S.A. 82 § 926.2). The state further recognizes that "the problem of water pollution within the state is closely related to the problem of water pollution in adjoining states" and therefore sets forth its policy:

1) to conserve the waters of the state and to protect, maintain and improve the quality thereof for public water supplies, for the propagation of wildlife, fish and aquatic life and other legitimate beneficial uses;
2) to provide that no waste be discharged without first being given the degree of treatment necessary to protect the legitimate beneficial uses of such waters;
3) to provide for the prevention, abatement, and control of new or existing water pollution;
4) and to cooperate with other agencies of this state, agencies of other states, and

> the federal government . . . (*Ibid.*)

Pollution is defined as the:

> contamination or other alteration of the physical, chemical or biological properties of any natural waters of the state, or such discharge of any liquid, gaseous or solid substance into any waters of the state as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life (O.S.A. § 926.1 (1)).

Furthermore, Oklahoma has expressly recognized that:

> certain waters of the State possess an existing water quality which exceeds those levels necessary to support propagation of fish, shellfish, wildlife, and recreation in and on the water. These high quality waters shall be maintained and protected unless the State decides, after full satisfaction of the intergovernmental coordination, and public participation provisions of the State's continuing planning process, to allow lower water quality as a result of necessary and justifiable economic or social development. Furthermore, where limited degradation is justified, the State shall require that any new point-source of pollution or increased load from an existing point-source, protect all the existing designated uses through the highest statutory and regulatory requirements, and feasible management or regulatory programs pursuant to Section 208 of Public Law 92-500 for non-point sources.
>
> No degradation shall be allowed in high quality waters which constitute an outstanding national resource, such as waters of National and State Parks and Wildlife Refuges, and waters of exceptional recreational or ecological significance (*Oklahoma's Water Quality Standards*, Publication 79, Oklahoma Water Resources Board, 1976, p. 3).

11.1.3 Classification

The Water Resources Board must classify waters according to their best uses in the interest of the public under such conditions as the Board may prescribe for the prevention, control and abatement of pollution (O.S.A. 82 § 926.3 (6)). Waters of the state are grouped into classes according to their best present and future uses in order to progressively improve the quality (O.S.A. 82 § 926.6).

The waters of Oklahoma have been classified in accordance with beneficial use. This classification is based on present or potential beneficial uses and specifies water quality objectives of lakes and streams. This scheme does not place a limitation on beneficial use, prohibit beneficial uses, or indicate any preference of uses. All reservoirs are protected to a degree which will permit primary and secondary body contact recreation. The specific classification is as follows:

CODE	BENEFICIAL USE
A	Public and private water supplies
B	Emergency public and private water supplies
C_1	Fish and wildlife propagation
C_2	Fish and wildlife propagation to the extent allowed by specifically stated water quality parameters
D	Agriculture (includes livestock watering and irrigation)
E	Hydroelectric power
F_1	Industrial and municipal cooling water
F_2	Receiving, transporting and/or assimilation of adequately treated waste
G_1	Recreation, primary body contact (includes recreational uses where the human body may come in direct contact with the water to the point of complete body submergence).
G_2	Recreation, secondary body contact (includes recreational uses, such as fishing, wading and boating, where ingestion of water is not probable)
H	Navigation
I	Aesthetics
J	Small-mouth bass fishery excluding lake waters
K	Trout fishery (put-and-take)

CODE	LIMITATION
(a)	All streams and reservoirs designated (a) are protected by prohibition of any future discharge of pollutants.
(b)	All streams designated (b) are return flow streams for which special water quality standards have been established.
(c)	Streams or stream systems in which advanced waste treatment of all waste discharges is required are designated (c).

The Water Resources Board must conduct public hearings prior to the classifying of waters (O.S.A. 82 § 926.6). This classification must be effectuated by an order from the Board and published according to law. Persons discharging waste into waters have a reasonable time to comply with the classification unless the discharge creates an actual or potential hazard to the public health. Furthermore, any discharge which is in accord with a classification or standard is deemed not to be a pollution.

11.1.4 Standards

The Water Resources Board must promulgate standards of quality of the waters of the state according to their best uses in the interest of the public under such conditions as the Board may prescribe for the prevention, control and abatement of pollution (O.S.A. 82 § 926.3). The Board must adopt standards of quality for each classification and must conduct a public hearing before setting any such standards.

The Water Resources Board has adopted General and Special Standards (*Water Quality Standards*, Pub. 79, 1976). General standards relate to in-stream numerical criteria, while the Special standards have been established for return flow streams and for mixing zones of passage (O.S.A. 82 § 926.6).

11.1.5 Permit System

Any person who discharges a waste into the waters of the State due to the process of industry, manufacturing, trade, or business or from the development, processing, or recovery of any natural resource must secure a permit from the Water Resources Board before committing such activity (*Oklahoma Water Resources Board Rules and Regulations*, Publication 45, § 505.1 p. 30, 1973, O.S.A. 82 § 926.4).

Any industry whose wastes are discharged directly into a municipal treatment facility, or whose discharges are subject to regulations by the Oklahoma Corporation Commission, are exempt from the permit requirements. All applications for a discharge permit must be on typewritten forms supplied by the Board (*Oklahoma Water Resources Board Rules and Regulations* § 510.1) and must be accompanied by a $25.00

filing fee, signed, and it must give the name and address of the applicant (Oklahoma Water Resources Board Rules and Regulations, § 510.2, .4, .5). The application must set forth the location of the plant and show the source of water supply and the amount used (Oklahoma Water Resources Board Rules and Regulations, § 510.6 and 510.7).

The regulations also set forth specific requirements for application information for domestic water disposal (Oklahoma Water Resources Board Rules and Regulations,§510.9), solid waste disposal (Oklahoma Water Resources Board Rules and Regulations, § 510.10), and industrial waste disposal (Oklahoma Water Resources Board Rules and Regulations, § 510.11).

Once an application has been duly filed and accepted, a notice will be prepared which sets forth the date and place of the public hearing (Oklahoma Water Resources Board Rules and Regulations, § 515.1). Notice is by publication (at the applicant's expense) once a week for two consecutive weeks (Oklahoma Water Resources Board Rules and Regulations, § 515.2).

The application, information obtained at the hearing, and the staff's recommendations are presented to the Board for their consideration (Oklahoma Water Resources Board Rules and Regulations, § 520.1). The Board may then require special conditions to be included in the permit.

Violation of Board regulations or orders is considered to be a misdemeanor and could be enjoined for continuing the violation (Oklahoma Water Resources Board Rules and Regulations, § 525.1).

11.1.6 Sanctions and Enforcement Measures

The Oklahoma Water Resources Board has the power to prohibit or abate discharges of wastes and can require the modification of, or the construction of, new disposal systems (O.S.A. 82 § 926.3). Whenever the Board has determined that the act or any of its orders has been violated, it must give notice to the violator, which requires the matter to be corrected (O.S.A. 82 § 926.7). The Board may act without a hearing in an emergency situation. Violation of the Act or a Board order is considered to be a misdemeanor and could result in an injunction (O.S.A. 82 § 926.10).

The Pollution Control Coordinating Board may issue written complaints whenever it has reason to believe that there was a violation of the Act, any regulation, a Board order, or when an agency failed to take necessary actions (O.S.A. 82 § 936). Any person who knowingly or wilfully violates a Board order is guilty of a misdemeanor and upon conviction can be punished up to $500 per day for ten days and up to $1000 per day for each day thereafter, or by imprisonment for no more than 90 days, or by both fine and imprisonment (O.S.A. 82 § 937). Furthermore, any person, firm, or corporation whose violations cause the death of fish or other wildlife are liable for damages in addition to the above mentioned penalties.

11.2 ADMINISTRATION OF THE LAWS

There are two entities in Oklahoma which are primarily responsible for the administration of water pollution control. These agencies are the Pollution Control Coordinating Board (hereafter referred to as the P.C.C.B.) and the Water Resources Board (hereafter referred to as the Board). See Figure 1.

11.2.1 Pollution Control Coordinating Board

The P.C.C.B. is made up of the head administrators from the Water Resources Board, the State Health Department, the Corporation Commission, the Department of Agriculture, and the Department of Wildlife Conservation (O.S.A. 82 § 932). Its primary function is to coordinate the pollution activities of the various agencies in order to avoid a duplication of effort and to promote efficient pollution abatement (O.S.A. 82 § 934).

The P.C.C.B. may act on its own initiative to abate pollution when three members concur that an agency has failed to discharge its duties. The mere existence of the P.C.C.B. has provided centralized planning and policy determinations regarding the state's internal pollution control programs. The P.C.C.B. also serves as a focal point for public opinion, allowing the legislature to concentrate upon specific pollution problems within the state.

11.2.2 Water Resources Board

The Water Resources Board is the primary agency for water resource development and water rights administration (O.S.A. 82 § 1071-1084). The Board also acts as the enforcement agency over industrial pollution. Daily functions of the Board are carried out by the Executive Director and his staff.

The Board is composed of nine members who are appointed by the Governor. Six members are appointed from each of the six congressional districts of the State and three members are appointed at large. The Board conducts a statewide water quality sampling program and issues permits to dispose of treated wastes (O.S.A. 82 § 926.3). Permit applications must contain the location and nature of the waste, location and volume of the effluent discharge, and the nature of waste treatment.

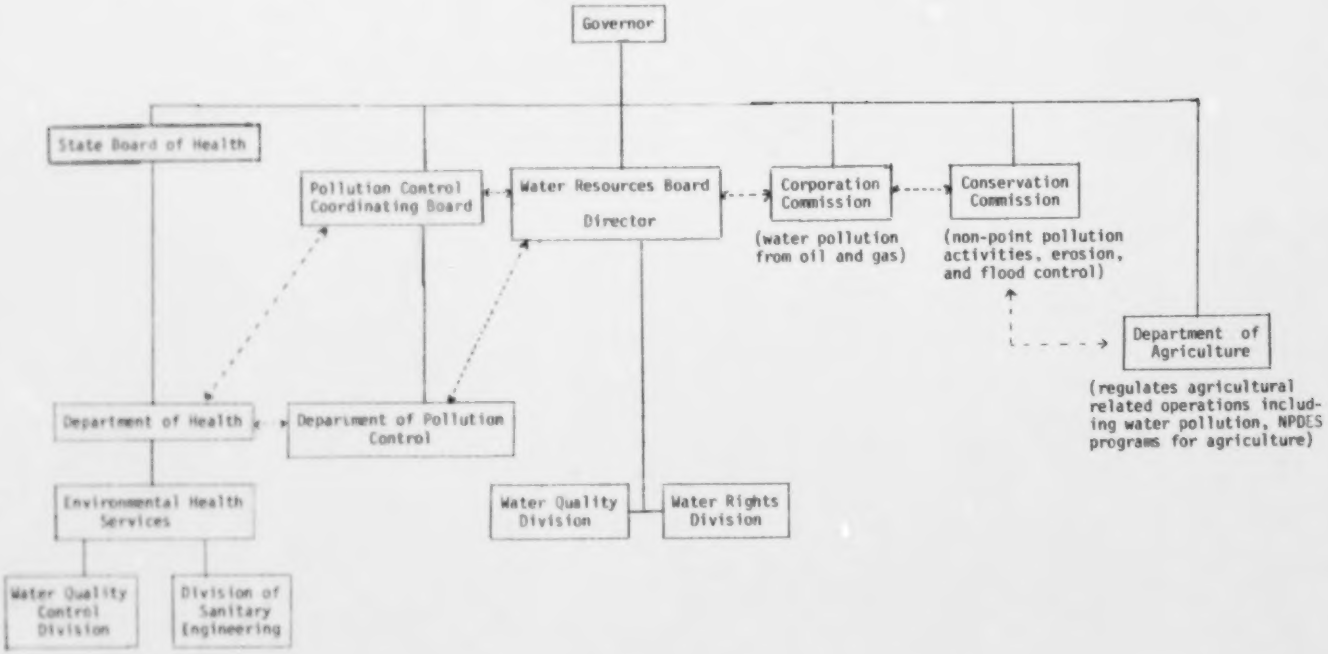
If pollution is suspected, an investigation follows. Samples are taken of the effluent and of the stream above and below the point of discharge. These samples are then compared with water quality standards for that particular stream. If the investigation discovers that detrimental pollution exists, the industry is informed of the necessity for abatement. If the industry takes no action within a reasonable time, the Board may issue a cease and desist order to prevent the discharge of the pollutant (O.S.A. 82 § 926.10).

11.2.3 Additional Agency Involvement

Other agencies do exist which play a role in the control of water pollution. The State Health Department controls municipal sewage disposal and treatment, the Corporation Commission regulates to prevent pollution which occurs in the production and refinement of petroleum, the Department of Agriculture inspects and licenses the use of pesticides that present a potential water pollution problem and finally, the Department of Wildlife Conservation is a watchdog over water pollution that interferes with the protection and propagation of game and fish.

The Water Resources Board, which was discussed above, is also responsible for the administration, control, and regulation of waters in the state. It also has the power to develop a state water plan so that the most effective use of water in the state will be insured (O.S.A. 82 § 1085.1 & .2).

Figure 1. Oklahoma Agencies Involved in Water Quality Control


Governor
State Board of Health
Pollution Control Coordinating Board
Water Resources Board Director
Corporation Commission
(water pollution from oil and gas)
Conservation Commission
(non-point pollution activities, erosion, and flood control)
Department of Agriculture
(regulates agricultural related operations including water pollution, NPDES programs for agriculture)
Department of Health
Depariment of Pollution Control
Environmental Health Services
Water Quality Control Division
Division of Sanitary Engineering
Water Quality Division
Water Rights Division

11.4 RELATED LEGISLATION

The Oklahoma State Drainage Act was created in 1910 (R.L. 1910, § 2959; Laws 1910-1911, c. 132, p. 289, § 1). This act was created to provide for the construction of drains and ditches to be used in carrying surface or flood water off lands and for the prevention of the inundation of lands by flood waters (O.S.A. 82 § 281). This act was repealed in 1972, but all district which were formed under this law are allowed to continue to operate (Repealed by Laws 1972, c. 133, § 1).

A 1935 act declared it to be a public necessity to promote, build and encourage the building of lakes, reservoirs, ponds, the terracing of lands, the prevention of wind and water erosion, the promotion of contour cultivation of lands, the irrigation of lands, and the saturation and storage of water in lands, and encourage the seeding of waste, abandoned or eroded lands to water-conserving and erosion preventing plants, trees and grasses and such other and further methods as shall economically effect such conservation (O.S.A. 82 § 456).
This act was subsequently repealed in 1972 (Laws 1972, c. 253 § 29).

11.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

A person must secure a permit from the Oklahoma Water Resources Board before discharging a waste into the waters of the State (Oklahoma Water Resources Board Rules and Regulations, Publication 45, 1973, 500.1 e).

Neither the Water Resources Board nor the Pollution Control Coordinating Board has promulgated regulations which deal with irrigation return flows or agricultural discharges. However, the Water Resources Board has adopted standards for return flow streams and mixing zones of passage.

11.6 CASE LAW APPLICABLE TO AGRICULTURE

In Oklahoma there exists a plethora of water quality cases. A large segment of these cases revolved around the following statute:

> No inflammable product from any oil or gas well shall be permitted to run into any tank, pool or stream used for watering stock; and all waste of oil and refuse from tanks or wells shall be drained into the proper receptacles at a safe distance from the tanks, wells or buildings, and be immediately burned or transported from the premises, and in no case shall it be permitted to flow over the land. Salt water shall not be allowed to flow over the surface of the land (Okla. Rev. Stat. 52 § 296).[1]

In Markwardt v. City of Guthrie (18 Okl. 32, 90 P. 26, 1907) the plaintiff alleged that due to the defendant's discharge of sewage, the water of Cottonwood Creek was rendered unfit for irrigating and made his vegetables unfit for marketing. The Supreme Court of Oklahoma held that a city does not have the power to discharge sewage into rivers and is liable for the wrongful maintenance of a public nuisance.

The Supreme Court of Oklahoma held in City of Cushing v. High (73 Okl. 151, 175 P. 229, 1918) that one could recover damages for discomfort, annoyance and personal inconvenience caused from the pollution of a stream.

In Comar Oil Co. v. Hackney (119 Okl. 285, 250 P. 93, 1926) the Supreme Court of Oklahoma held that an award of damages for the injuries to his realty could properly include future damages. In this case, salt water from the defendant's oil operation had permeated the soil and permanently destroyed the land for agricultural purposes. The court stated that the destructive effect upon the soil by salt water is of such common notoriety as to constitute judicial knowledge.

In 1931, the Oklahoma Supreme Court held in Tidal Oil Co. v. Pease (5 P. 24 389, 1939) that in order to make tort feasors jointly liable, there must be some sort of community in the wrongdoing and the injury must be in some way due to their joint work. The court went on to say that it was not necessary for the tort feasors to be acting together or in concert if their concurring wrongful acts occasioned the injury. This case involved an action to recover damages for the pollution of a stockwater supply caused by the acts of the defendants in allowing oil, salt water, and other deleterious substances to escape from their oil-mining operation.

In 1935, the Oklahoma Supreme Court held that an earlier denial of an injunction does not prevent an action for damages from the pollution of a stream (Champlin Refining Co. v. Brooks, 172 Okl. 124 42 P.2d 811, 1935).

Martin British American Oil Producing Co. (102 P.2d 124, 1940) involved an action to recover damages caused by the defendant's act of constructing a pipeline which discharged pollutants into a stream which ran through the plaintiff's land. The court held that one riparian owner could use water from a stream as he deemed proper, so long as that use was reasonable and did not injure or damage other riparian owners. In cases such as this, reasonable use is a question of fact for the jury.

11.7 INFORMATION SOURCES

Pyle, Ronnie D., "Water and Watercourses: Water Pollution Laws and Their Enforcement in Oklahoma," 22 Oklahoma Law Review 317, (1969).

________, Oklahoma Water Quality Standards, Publication No. 79, Okla. Water Resources Board, 1976.

________, Oklahoma Water Resources Board Rules and Regulations, Publication No. 45, Oklahoma Water Resources Board, 1973.

---

[1] For a comprehensive list of these cases see O.S.A. 52 § 296 and the cases that are listed following that statute.

12. OREGON

12.1 SUMMARY OF WATER QUALITY LAWS

12.1.1 Background

As early as 1889, Oregon statutes prohibited the pollution of water used for domestic or farm purposes (Gen. Laws of Ore. 1889, p. 89 § 1). Other laws were subsequently passed which prohibited people from putting any "dead animal carcass or part thereof, excrement, putrid, nauseous, noisome, decaying, deleterious, or offensive substance into or in any other manner not herein named which befouls, pollutes, or impairs the quality of any spring, river, brook, creek, branch, well, cistern or pond of water which is or may be used for domestic purposes of to which . . . domestic stock have access . . . " (Gen. Laws of Ore. 1919, ch. 264, § 115).

A major step toward control of water quality in Oregon came in the 1939 general election when the voters approved an initiative measure establishing the State Sanitary Authority within the State Board of Health. The act was designated as Chapter 3, Oregon Laws 1939 and the title to this act was as follows:

> An act providing for the purification of waters, rivers, streams, lakes, watersheds and coastal areas of the state of Oregon; regulating and controlling the use of such waters as to pollution, sewage, and other wastes; authorizing and providing for the means, facilities, operations and proceeding for carrying into effect such provisions, and for all other matters and things properly connected therewith.

This law, as amended in subsequent sessions of the legislature, was codified as Oregon Revised Statute (O.R.S. §§ 449.015 to 449.100). In State Sanitary Authority v. Pacific Meat Co., (226 Ore. 494, 360 P.2d 364, 1961) the court stated that the present statute (Chapter 449) was the amended form of the 1939 anti-pollution statute.

This legislation has subsequently been reinacted under Chapter 468 in the 1975 Session of the Oregon Legislature (O.R.S. §§ 468.005 through 468.997). The apparent reason for this change was the creation of a section of Oregon law which would be exclusively devoted to Pollution Control. The major subdivisions of the present act cover the topics of General Administration (O.R.S. §§ 468.005-.075), Enforcement (O.R.S. §§ 468.090-.140), Pollution Control Facilities Tax Credit (O.R.S. §§ 468.150-.190), State Pollution Control Bonds (O.R.S. §§ 468.195-.260), County Pollution Control Facilities (O.R.S. §§ 468.263-.272), Air Pollution Control (O.R.S. §§ 468.275-.350), Motor Vehicle Pollution Control (O.R.S. §§ 468.360-.420), Field Burning Regulation (O.R.S. §§ 468.450-.485), Regional Air Quality Control Authorities (O.R.S. §§ 468.500-.580), Aerosol Spray Control (O.R.S. §§468.600-.605), Water Pollution Control (O.R.S. §§ 468.700-.775), Oil Spillage Regulation (O.R.S. §§ 468.780-.815), and Penalties (O.R.S. §§ 468.900-.997).

12.1.2 Policy

The Oregon act provides for the creation of an Environmental Quality Commission consisting of five members who are appointed by the Governor (O.R.S. § 468.010). The Commission is responsible for establishing the policies for operation of the Department of Environmental Quality (O.R.S. § 468.020). The statutorily announced policy on water pollution focuses attention on the following items:

> (1) To conserve the waters of the state;
> (2) To protect, maintain, and improve the quality of the waters of the state for public water supplies, for the propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, municipal, recreational and other legitimate beneficial uses;
> (3) To provide that no waste be discharged into any waters of this state without first receiving the necessary treatment or other corrective action to protect the legitimate beneficial uses of such waters;
> (4) To provide for the prevention, abatement and control of new or existing water pollution; and
> (5) To cooperate with other agencies of the state, agencies of other states and the Federal Government in carrying out these objectives (O.R.S. § 468.710, Emphasis Added).

The pollution of water in Oregon is further declared to be contrary to public policy and the Department of Environmental Quality is given the duty of implementing the above policy by fostering cooperation among water users to prevent pollution and by requiring the use of those methods which conform to the established water quality standards (O.R.S. § 468.715).

Although the act does not expressly declare water pollution to be a public nuisance, the term "Pollution" as is used in the regulations of the Department of Environmental Quality equates pollution with the creation of a public nuisance (Oregon Administrative Rules, hereafter O.A.R., Ch. 340, § 41-005 (4)).

12.1.3 Classification

Oregon does not have a system to classify their waters.

12.1.4 Standards

The Oregon Environmental Quality Commission has adopted an extensive set of standards for water quality and purity under the authority granted to that body by statute (O.R.S. § 468.735). The enabling legislation requires the commission to consider the following factors in the adoption of these standards:

> (a) The extent, if any, to which floating solids may be permitted in the water;
> (b) The extent, if any, to which suspended solids, settleable solids, colloids, or a combination of solids with other substances suspended in water may be permitted;
> (c) The extent, if any, to which organisms of the coliform group, and other bacteriological organisms or virus may be permitted in the waters;
> (d) The extent of the oxygen demand which may be permitted in the receiving waters;
> (e) The minimum dissolved oxygen content of the waters that shall be maintained;
> (f) The limits of other physical, chemical, biological or radiological properties that may be necessary for preserving the quality

and purity of the waters of the state;
(g) The extent to which any substance must be excluded from the waters for the protection and preservation of public health; and
(h) The value of stability and the public's right to rely upon standards as adopted for a reasonable period of time to permit institutions, municipalities, commerce, industries and others to plan, schedule, finance and operate improvements in an orderly and practical manner (*Ibid.*).

As an additional requirement, the water quality standards which are established must be consistent with the policies and programs which the Water Policy Review Board adopts for the use and control of state water resources under O.R.S. §§ 536.210 to 536.550 (*Ibid.*). The Commission is also given authority to establish rules regulating effluent limitations, as defined in Section 502 of the Federal Water Pollution Control Act, and other minimum requirements for waste disposal (O.R.S. § 468-725).

The Commission has taken a dualistic approach to the adoption of water quality standards. First, they have adopted General Water Quality Standards which apply to all waters of the state unless expressly superseded (O.A.R. 340, § 41-025, 1975). General standards cover the following parameters of restricted water pollution:

(1) The dissolved oxygen content of surface waters to be less than six (6) milligrams per liter unless specified otherwise by special standards;
(2) The hydrogen-ion concentration (pH) of the waters to be outside the range of 6.5 to 8.5 unless specified otherwise by special standards;
(3) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide or any other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters;
(4) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation or industry;
(5) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish;
(6) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation or industry;
(7) Objectionable discoloration, turbidity, scum, oily slick or floating solids, or coat the aquatic life with oil films;
(8) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, *irrigation*, bathing, or shellfish propagation, or be otherwise injurious to public health;
(9) Any measurable increase in temperature when the receiving water temperatures are 64° F. or greater; or more than 0.5° F. increase due to a single-source discharge when receiving water temperatures are 63.5° F. or less; or more than 2° F. increase due to all sources combined when receiving water temperatures are 62° F. or less;
(10) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch;
(11) Radioisotope concentration to exceed Maximum Permissive Concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, *irrigated crops*, livestock and dairy products or pose an external radiation hazard; or
(12) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection to exceed one hundred and five percent (105%) of saturation, except when streamflow exceeds the 10-year, 7-day average flood (*Ibid.*, Emphasis added).

As mentioned above, General Water Quality Standards will be applied unless they are superseded. This brings into play the second level of water standards used in the Oregon scheme--the Special Water Quality Standards. Special Water Quality Standards are those which have been adopted for specifically designated waters of the state (See O.A.R., Chapter 40, §§ 41-035 through 41-105, to determine specific standards applicable to a certain river system).

12.1.5 Permit System

A permit from the Department of Environmental Quality is required before the following activities can take place in Oregon:

(1) Discharge of any wastes into the waters of the state from any industrial or commercial establishment or activity or any disposal system;
(2) Construct, install, modify, or operate any disposal system or part thereof or any extension or addition thereto;
(3) Increase in volume or strength of any wastes in excess of the permissive discharges specified under an existing permit;
(4) Construct, install, operate or conduct any industrial, commercial, or other establishment or activity or any extension or modification thereof or addition thereto, the operation or conduct of which would cause an increase in the discharge of wastes into the waters of the state or which would otherwise alter the physical, chemical or biological properties of any waters of the state in any manner not already lawfully authorized;
(5) Construct or use any new outlet for the discharge of any wastes into the waters of the state (O.R.S. § 468.740).

Application for discharge or construction permits is made to the Department of Environmental Quality. The enabling legislation allows the issuance of permits subject to compliance with specified conditions and permits are only issued for a specific duration (O.R.S. § 468.065). The department can also establish fee schedules for permits and the submission of plans and periodic reports (*Ibid.*). The Department is authorized to deny, modify, suspend, or revoke a permit which it has issued on grounds of material misrepresentation in the original application, failure to comply with the conditions of the permit, or for violations of the statute or rule of the Commission (O.R.S. § 468.070). Any such action of this nature on the part of the Department is to be conducted as a contested case before the administrative agency with the right to petition for judicial review (Ibid.). This procedure for the issuance of permits has functioned since the 1971 version of the Act.

The Commission is given the authority to perform any acts necessary to implement on the state level the provisions of the Federal Water Pollution Control Act of 1972 and any supplemental amendments to the Act (O.R.S. § 468.730).

Pursuant to this authority, the Commission has adopted regulations governing the issuance of discharge permits under the National Pollutant Discharge Elimination System program (O.A.R., Ch. 58, § 45-005 to 45-065). Under these regulations, a permit is required for the initial discharge of wastes into state waters or the increase in volume or strength of existing discharges (O.A.R., Ch. 58, § 45-015). The term "wastes" for the purpose of the above regulations includes agricultural wastes "which will or may cause pollution or tend to cause pollution of any waters of the state" (O.A.R., Ch. 58, § 44-005(3)).

12.1.6 Sanctions and Enforcement Measures

Enforcement of water quality controls is delegated to the Department of Environmental Quality (O.R.S. §§ 468.090 to 468.140). The legislation directs the Department to first attempt to endeavor to gain compliance of the Act or agency regulations by conference and conciliation (O.R.S. § 468.090). If this method fails to resolve the situation, the Department can bring enforcement proceedings (Ibid.). Persons who are adversely affected by the order issued by the Department have the right to appeal the order to court and request a stay of enforcement (O.R.S. § 468.110).

The Oregon law provides for the imposition of both civil and criminal penalties. The Commission is empowered to adopt by regulation a schedule for civil penalties, but the penalty cannot exceed $500 per day (O.R.S. § 468.130). The penalty is due and payable when the offender has received notice of the violation (O.R.S. § 468.140). Persons who violate the terms and conditions of waste discharge permits incur a civil penalty of up to $10,000 for each day of the violation (O.R.S. § 468.140).

Willful or negligent violations are treated as misdemeanors and convictions can result in a fine of up to $25,000 or a jail sentence of up to one year (O.R.S. § 468.990). Each day of violation is treated as a separate offense (Ibid.).

12.2 ADMINISTRATION OF WATER QUALITY LAWS

The following agencies are involved in the administration and implementation of Oregon's water laws.

12.2.1 Water Quality Control

The Environmental Quality Commission is established as the policy making body under the Environmental Quality Act (O.R.S. § 468.015). In this capacity, the Commission is responsible for adopting the rules and regulations which control the operation of the Department of Environmental Quality (O.R.S. § 468.020). The Commission consists of five members of the public who are appointed to four-year terms by the Governor (O.R.S. § 468.010).

The administrative operation of the Act is delegated to the Department of Environmental Quality. As such, the Department is directed to: (1) encourage voluntary cooperation in restoring and preserving the quality and purity of the waters of the state; (2) conduct studies and investigations pertaining to water quality; and (3) advise, consult, and cooperate with other agencies of the state, the federal government, other political subdivisions, and industry regarding water pollution control (O.R.S. § 468.035). The Department also has general authority for the enforcement of the water pollution control laws of the state (Ibid.). The Department has been established of the executive-administrative branch and consists of the Director of the Department and the other personnel (O.R.S. § 468.030).

The Director functions as the administrative head of the Department and is custodian of the records of the Department (O.R.S. § 468.045). The Director is appointed by the Commission and serves at their pleasure (O.R.S. § 468.040). See Figure 1 for the organization chart of the Department.

12.2.2 Additional Agency Involvement

The Health Division is given the authority to make and enforce regulations regarding the quality of water used for human or animal consumption (O.R.S. §§ 448.205 to 448.325). This agency also has authority over the quality of water of public swimming areas (O.R.S. §§ 431.110 and 448.215).

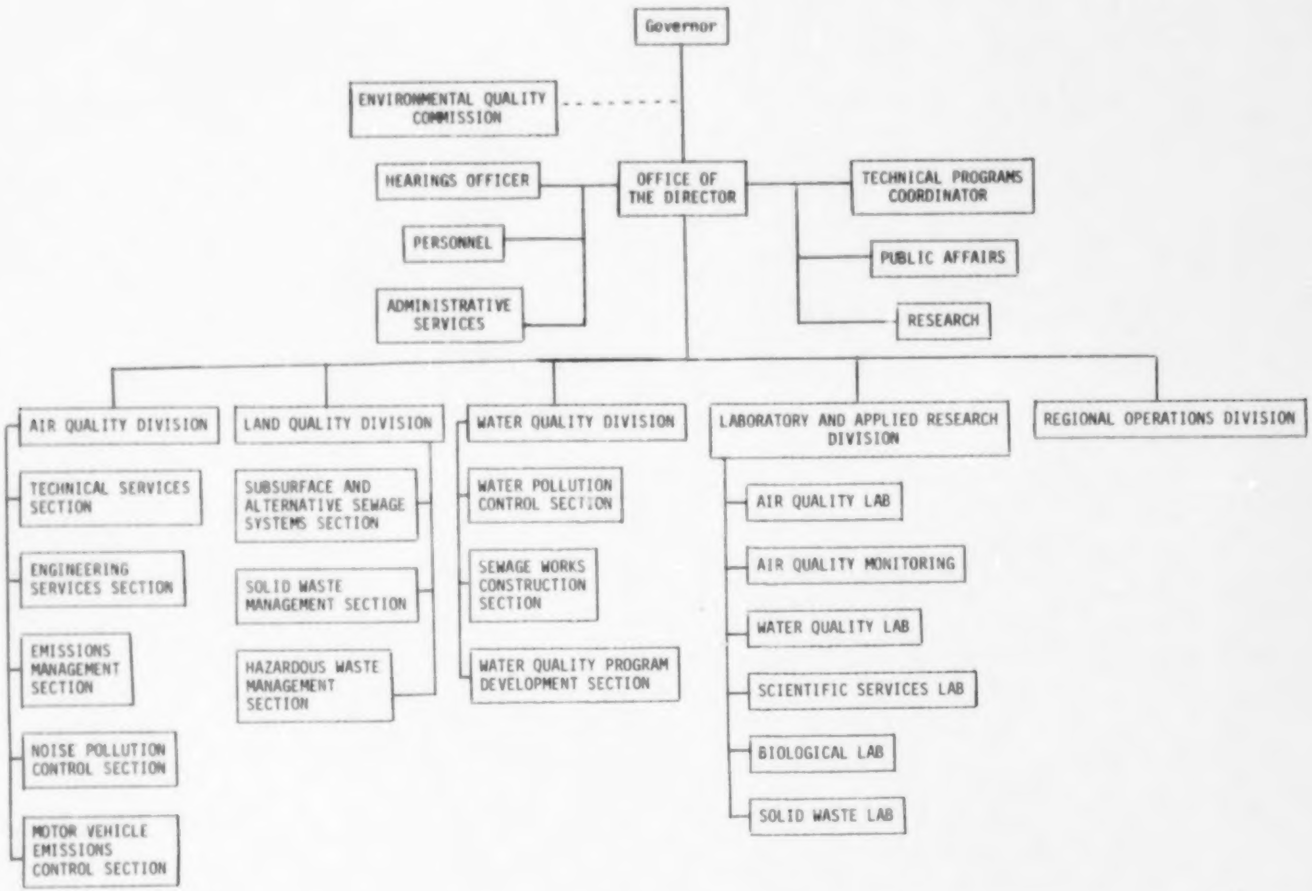
A significant reorganization took place in 1975 that may cause confusion in keeping straight the agencies concerned with water quantity control in Oregon. Prior to July 2, 1975, the water administration was carried out by the Office of State Engineer with policy direction and formulation made by the Water Resources Board. On July 2, 1975, House Bill 3180 was signed, abolishing these two bodies and creating the Department of Water Resources and Water Policy Review Board. See Figure 2 for the relationship of the various state agencies concerned with water.

The Board, originally created in 1955, is composed of seven members appointed by the Governor (O.R.S. § 536.014; H.B. 3180, § 15, 1975). It was created to determine the policy of the state in providing for the proper utilization and control of the state's water resources through a coordinated and integrated multipurpose water resource policy designed to secure the maximum beneficial use of water (O.R.S. § 536.220). In fulfilling this policy, the Board is required to take into consideration additional legislative declarations of policy which require a multipurpose approach to water development and utilization, and provide that a wide range of beneficial uses be evaluated in the planning process (O.R.S. § 536.310).

Subject to existing rights, the Board may classify water sources according to their highest and best use, quantities of use, and may also designate preferences for future use (O.R.S. § 536.340). Classification by the Board has the effect of restricting the use and quantities of use of the unallocated water in accordance with the classification noted (Ibid.).

The policy statements which the Board adopts under the statutory guidelines are binding upon every state agency and public corporation in carrying out their duties (O.R.S. § 536.360). Furthermore, no agency is to exercise any function which is in conflict with the announced water resources policy without obtaining the approval of the Board (O.R.S. § 536.370). The Board may withdraw any unappropriated water from

Figure 1. Organization Chart of the Department of Environmental Quality


Governor
ENVIRONMENTAL QUALITY COMMISSION
HEARINGS OFFICER
OFFICE OF THE DIRECTOR
TECHNICAL PROGRAMS COORDINATOR
PERSONNEL
PUBLIC AFFAIRS
ADMINISTRATIVE SERVICES
RESEARCH
AIR QUALITY DIVISION
LAND QUALITY DIVISION
WATER QUALITY DIVISION
LABORATORY AND APPLIED RESEARCH DIVISION
REGIONAL OPERATIONS DIVISION
TECHNICAL SERVICES SECTION
SUBSURFACE AND ALTERNATIVE SEWAGE SYSTEMS SECTION
WATER POLLUTION CONTROL SECTION
AIR QUALITY LAB
AIR QUALITY MONITORING
ENGINEERING SERVICES SECTION
SOLID WASTE MANAGEMENT SECTION
SEWAGE WORKS CONSTRUCTION SECTION
WATER QUALITY LAB
EMISSIONS MANAGEMENT SECTION
HAZARDOUS WASTE MANAGEMENT SECTION
WATER QUALITY PROGRAM DEVELOPMENT SECTION
SCIENTIFIC SERVICES LAB
NOISE POLLUTION CONTROL SECTION
BIOLOGICAL LAB
SOLID WASTE LAB
MOTOR VEHICLE EMISSIONS CONTROL SECTION

appropriation if it deems such action is necessary to insure compliance with the state water resources policy, or that such action is needed to protect the public interest in conserving the water resources of the state (O.R.S. § 536.410). It has been given the authority to apply to the circuit court for an order restraining other state agencies or public corporations from carrying out actions which are in violation of Board policies (O.R.S. § 536.400).

In the area of water quality, the Board is expressly directed to develop policies which support "The maintenance of minimum perennial stream flows sufficient to aquatic life and to minimize pollution shall be fostered and encouraged if existing rights and priorities under existing laws will permit" (O.R.S. § 536.310(7)). The Board is further directed that "Due regard shall be given in the planning and development of water recreation facilities to safeguard against pollution" (O.R.S. § 536.310(9)). As stated previously, the water quality standards adopted by the Environmental Quality Commission are required to be consistent with the policies of the Water Policy Review Board (O.R.S. § 468.753).

The Director of the Department of Water Resources is charged with administrative responsibility relative to distribution of water and control of water rights and to carry out the policies and directions of the Board. To insure local administration of the law, the state is divided into water districts and supervised by watermasters appointed by the Director. These watermasters are required to limit gross waste of water and can reduce diversions if necessary to reduce waste.

12.3 SPECIAL LEGISLATION

Oregon statutes contain two chapters of special legislation affecting water quality control. The first provides for regulation of sewage treatment and disposal systems (O.R.S. § 454.010 to .755). This chapter 454 does not relate to agricultural uses or discharges.

The second chapter, on solid waste management, chapter 459, likewise does not directly affect irrigated agriculture (O.R.S. §§459.005 to .995). However, in setting out the policy and procedures for solid waste management in the State, the legislation defines solid wastes to be all putrescible and nonputrescible wastes including manure but not

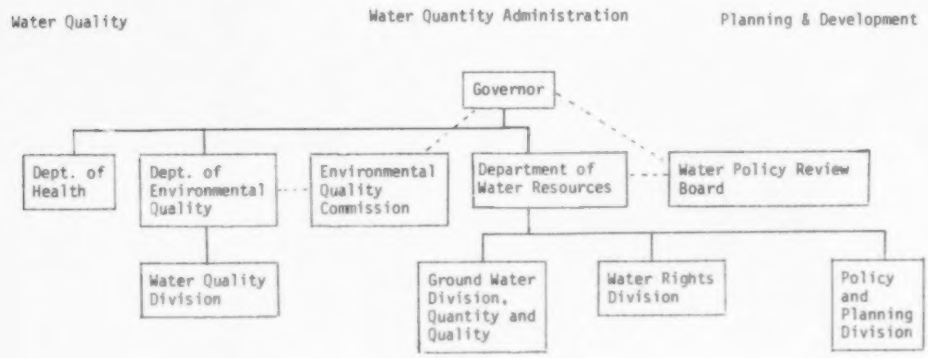
> (b) Materials used for fertilizer or for other productive purposes or which are salvageable as such materials are used on land in agricultural operations and the growing or harvesting of crops and the raising of fowls or animals" (O.R.S. § 459.005(11)).

12.4 RELATED LEGISLATION

12.4.1 Soil and Water Conservation Districts

Among the purposes for which Soil and Water Conservation Districts are organized are the prevention of soil erosion, flood control, the conservation and development of water resources and improvement of water quality (O.R.S. § 568.225). Districts are organized on a state-wide basis and are under the direction of the State Soil and Water Conservation

Figure 2. Oregon Water Agencies and Major Functions



Water Quality
Water Quantity Administration
Planning & Development
Governor
Dept. of Health
Dept. of Environmental Quality
Environmental Quality Commission
Department of Water Resources
Water Policy Review Board
Water Quality Division
Ground Water Division, Quantity and Quality
Water Rights Division
Policy and Planning Division

Commission (O.R.S. § 568.210). The Commission is composed of five members who are appointed by the Governor (O.R.S. § 568.240).

Local districts are formed by the submission of a petition to the Commission which is signed by at least twenty-five landowners who hold title to 70% of the land to be included in the proposed district (O.R.S. § 568.300). Final approval of the district is accomplished by referendum ballot (O.R.S. § 568.350). The activities of local districts are governed by an elected board of directors (O.R.S. § 568.520).

The board of directors formulate land use regulations which are submitted by referendum to landowners within the district for their approval (O.R.S. § 568.640). The directors can petition the county circuit court for enforcement of the adopted land use regulations (O.R.S. § 568.700).

12.4.2 Sanitary District and Authorities; Water Supply Authorities

These special districts and authorities are formed for the purposes of providing water and sanitation facilities and services (O.R.S. § 450.009). Formation of these entities is possible only in areas beyond the corporate boundaries of cities and towns (O.R.S. § 450.245).

Financing is provided by issuance of revenue or general obligation bonds (O.R.S. § 450.265 and § 450.895). Repayment is accomplished through tax levies and assessments (O.R.S. §§ 450.300 and 450.875).

12.4.3 Drainage Districts

The purpose of these districts is to assist owners of land which can be reclaimed and protected by drainage or otherwise from the effects of water used for sanitary or agricultural purposes (O.R.S. § 547.005). Drainage districts are formed by submission of a petition signed by the owners of 50% of the contiguous lands in the area which are swamp, wet or overflowed (Ibid.). The petition is submitted to the county circuit court (O.R.S. § 547.010).

The affairs of the district are governed by an elected board of supervisors (O.R.S. § 547.105). District financing is accomplished by issuance of bonds which are repaid by taxes and special assessments (O.R.S. §§ 547.455 to 547.697).

Also, counties which have populations over 50,000 people are given authority to undertake programs with respect to water conservation and flood control (O.R.S. § 549.710).

12.4.4 Irrigation Districts

Oregon statutes contain extensive provision for the establishment of irrigation districts. Formation of these districts is initiated by filing a petition with the county circuit court (O.R.S. § 545.003). Final action is taken by referendum election following a hearing by the county court.

Irrigation districts are given broad powers to construct and operate works, engage in drainage programs, enter into contracts with the Federal Government and other districts for construction of irrigation and other water use works (O.R.S. §§ 545.102 to 545.124).

Other provisions confer development of lands by the United States (O.R.S. §§ 545.172 to 545.178), issuance of bonds (O.R.S. §§ 545.192 to 545.290), and levying and collecting assessments (O.R.S. §§545.482 to 545.508).

12.4.5 Diking Districts

These districts are organized for the purposes of carrying out improvement of land subject to tidal overflow or freshets (O.R.S. § 551.020). Formation is begun by filing a petition with the county circuit court (Ibid.). District activities are governed by an advisory board and a superintendent which are selected by the landowners (O.R.S. § 551.090). Cost of improvements is apportioned among landowners whose lands are benefited (O.R.S. § 551.060).

12.4.6 Water Improvement Districts

These districts are formed for the purpose of undertaking any type of improvements which result in greater efficiency in the beneficial use of water (O.R.S. § 552.013). Organization is accomplished through the typical petition and hearing process in the county court (O.R.S. § 552.113). These districts must include a minimum of 1000 acres which can include areas which are already part of municipalities, and other special districts (Ibid.).

Such districts have the power to: (1) exercise eminent domain, (2) contract with all levels of government for the construction and operation of works; and (3) to acquire water rights and sell, lease or deliver water services (O.R.S. § 552.305). All district plans for water improvement must conform to state water resource policy as declared in O.R.S. § 536.220 (O.R.S. § 552.423).

Financing is accomplished by issuance of bonds which are repaid by charges for water services, tax levies, and special assessments (O.R.S. §§ 552.603 to 552.670).

12.4.7 Water Control Districts

Water Control Districts are established for the purposes of constructing and operating drainage, irrigation, flood and surface water control works to prevent damage and destruction due to flooding (O.R.S. § 553.020). To accomplish these purposes, the districts are given such powers as eminent domain, the ability to acquire water rights, and to sell or lease water (O.R.S. § 553.090).

Financing is accomplished through the issuance of bonds which are repaid by assessments (Ibid.). Activities of water control districts are governed by a board of directors who are elected by the voters of the district (O.R.S. § 553.210).

12.4.8 Corporations for Irrigation, Drainage, Water Supply or Flood Control

Private companies are authorized to incorporate for the purpose of providing irrigation, drainage, water supply or flood control services (O.R.S. § 554.010). These corporations can be organized as nonprofit corporations, as well as profit making entities. Activities are controlled by a board of directors elected by the stockholders. Financing is accomplished by the issuance of bonds which are retired by the payment of assessments from benefited stockholders. Indebtedness cannot exceed the amount of assessments, or value of benefits.

12.4.9 Comprehensive Planning Coordination; Planning Districts

Oregon has enacted extensive provisions for state-wide planning and coordination of planning efforts between state, regional and local efforts. The main area of interest for these planning efforts is land use.

On the state level, a Conservation and Development Commission is created as the policy body for preparing and adopting state-wide land use goals and guidelines (O.R.S. §§ 197.005 - 197.060). These goals and guidelines are formulated during an extensive public hearing process (O.R.S. § 197.235). Once adopted, city and county planning commissions are required to have their comprehensive plans comply with state goals (O.R.S. § 197.330).

To facilitate the Commission in the accomplishment of their duties, the legislation provides for the establishment of a Land Conservation and Development Department (O.R.S. § 197.075). A Joint Legislative Committee on Land Use is also created to review the need for legislative action in the area of land use control (O.R.S. § 197.125). Finally, state and county citizen advisory committees are established to provide further public input into land use decisions (O.R.S. § 197.160).

This legislation enables Planning Districts to be formed across city and county boundaries as a means of coordinating planning efforts between local governments (O.R.S. § 197.705). Approval of the Governor is required before these districts are officially constituted (O.R.S. § 197.725).

12.4.10 Fill and Removal Permits

The Director of the Division of State Lands is given the authority to issue permits for the filling or removal of more than 50 cubic yards of material at one location during the calendar year (O.R.S. § 541.605). The permit must be issued in conformity with the rules of the State Water Resources Board (O.R.S. § 541.625). It is a public nuisance to engage in the filling or removal of material beyond the above limits without a permit (O.R.S. § 541.645). The State Water Resources Board is given the authority to enforce compliance with the Act by bringing an action for abatement of a public nuisance (O.R.S. § 541.650).

12.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

12.5.1 Agriculture in General

Department of Environmental Quality regulations define "pollution" to include the contamination or alteration of water quality in a manner which is harmful to a number of beneficial water uses including agriculture (O.A.R., Ch. 340, § 41-005(4), 1976).

Specific regulations addressing water quality problems associated with confined livestock feeding operations have been adopted by the Department of Environmental Quality (O.A.R., Ch. 340, §§ 51-005 to 51-080, 1972). The regulations were adopted for the purpose of protecting the quality of the environment and public health by requiring the application of "best practicable waste control technology relative to location, construction, operation, and maintenance of confined animal feeding or holding facilities and operations" (Ibid., § 51-005). The effect of the regulations is to require Departmental approval of all the plans for such operations prior to construction.

Additional regulations have been adopted which control the operation of: (1) facilities for the removal of fruit and vegetable wastes (O.A.R., Ch. 340, § 43-005, 1950); (2) facilities for the cleaning of slaughterhouses and meat packing plants (O.A.R., Ch. 340, § 43-015, 1950); (3) collection of wastes from slaughterhouses and meat packing plants (O.A.R., Ch. 340, § 43-020, 1950); (4) poultry killing and packing plants (O.A.R., Ch. 340, § 43-025, 1950); and (5) hog feeding farms (O.A.R., Ch. 340, § 43-030, 1950).

12.5.2 Irrigation Return Flow

Oregon laws and regulations contain neither express provisions controlling irrigation return flow, nor are there any specific prohibitions concerning the regulation of that aspect of on-farm water use.

As a practical matter, the Department of Environmental Quality has issued NPDES permits to approximately half of the state's large irrigation districts under the provision of Oregon Administrative Rules, Department of Environmental Quality, Chapter 340, §§ 45-005 through 45-030. Appendix 12-A is an example of the permits issued. The remaining irrigation districts have contested the requirement that they obtain permits which are ostensibly for the control of point-source discharges (Letter from D.E.Q. to Radosevich, dates 3/26/76).

The Oregon Department of Environmental Quality favors the development of an Agricultural Practices Act as the appropriate method for controlling water quality problems through improved practices rather than point-source treatment.

12.6 CASE LAW APPLICABLE TO AGRICULTURE

12.6.1 Before the Environmental Quality Act

As mentioned in the introductory portion of this report, the legislative history of the present legislation can be traced back to the legislation establishing the State Sanitary Authority in 1939 (State Sanitary Authority v. Pacific Meat Co., 226 Ore. 494, 360 P.2d 634, 1961). During this early period, there were few cases decided by the Oregon Courts which involved water pollution control. However, certain cases are reported which involved proceedings instituted by private litigants, such as Brown v. Gold Coin Mining Co., (48 Ore. 277, 86 P. 361, 1906), where a farmer successfully enjoined a mining company from dumping tailings from a quartz mill into a stream which was used by the plaintiff for irrigation purposes. A similar case with agricultural overtones was Adams v. Clover Hills Farms (86 Ore. 140, 167 P. 1015, 1917), where a neighboring farmer enjoined defendant from allowing his dairy farm refuse to go into a stream.

One of the few reported cases in Oregon illustrating the enforcement of statutory provisions during the formative stages of pollution control legislation is the case of Smith v. Silverton (71 Ore. 379, 142 P. 609, 1914), where the State Board of Health brought an action to enjoin the discharge of municipal wastes into a riparian stream. Although the injunction was refused on an issue of sufficiency of evidence, the court stated the following:

> The right of the state to enjoin a nuisance may be delegated to and exercised by a city or other power especially named for that purpose (*Bernard v. Willamette Box & Lumber Co.*, 64 Ore. 226, 129 P. 1039, *Ibid*. at 394, 142 P. at 611).

Such language was indicative of the direction of judicial policy in Oregon and provided incentive for the subsequent enactment of more comprehensive legislation in 1939 granting the State Sanitary Authority the power to enforce water quality legislation.

The only reported case where an injunction instituted by the State Sanitary Authority was appealed is *State Sanitary Authority v. Pacific Meat Co.* (226 Ore. 494, 360 P.2d 634, 1961). The court sustained the injunction's validity and pointed out that the state had the authority beyond that granted the agency to abate a public nuisance.

12.6.2 Environmental Quality Act

One writer has noted the improvements and additions made by subsequent sessions of the Oregon Legislature, primarily during the 1960's, which aided the attainment of state water quality goals (Quesseth, 1965). At the time of this writing, no appeals have been taken under the sections of Oregon law which provide for regulation of water quality. However, it is interesting to note that suits by private parties to enjoin water pollution still continue despite the statutory provisions. In *Swango v. Country Squire Motel, Inc.* (247 Ore. 601, 431 P.2d 839, 1967), plaintiff brought an action to enjoin pollution of a stream and a request for damages due injury to his cattle from that pollution. The decision of the trial court was affirmed by the Oregon Supreme Court and no relief was granted the plaintiff due to insufficiency of evidence that the pollution was the cause of the injury.

12.7 INFORMATION SOURCES

Bonney, Louis S., "Oregon's Coordinated Integrated Water Resources Policy," 3 *Willamette L.J.*, 295 (1965).

Clark, Chapin D., *Survey of Oregon's Water Laws*, Water Resources Research Institute, Oregon State University, March 1974.

Haskins, Robert L., "Towards Better Administration of Water Quality Control," 49 *Ore. L. Rev.* 373, 1970.

Bell, Neal H., "Beneficial Use of Water," Note, 3 *Willamette L.J.*, 382 (1965).

Quesseth, Cecil H., "Water Pollution Control Laws of Oregon: Problems of Enforcement," 3 *Willamette L.J.*, 284 (1965).

__________, *Oregon's Long-Range Requirements for Water, Summary Report*, May 1969, and Appendix VI, *Water Quality*, June 1969, Water Resources Department,* Salem, Ore., 1969.

__________, *Trends and Anticipated Changes in Water-Use Practices for Irrigation in the Willamette Valley*, Ore. State Univ. and Water Resources Dept.,* Salem, Ore., Nov. 1965.

__________, *Water Laws of Oregon*, Water Resources Department,* Salem, Ore., 1972.

__________, *Water Quality Control in Oregon: A Status Report*, Department of Environmental Quality, Portland, Ore., April, 1975.

---

*These reports were prepared by the former State Engineer and Water Resources Board. Reference to the current Water Resources Department is to facilitate identification.

APPENDIX 12-A

National Pollutant Discharge Elimination System
WASTE DISCHARGE PERMIT
Department of Environmental Quality
1234 S.W. Morrison Street
Portland, Oregon 97205
Telephone: (503) 229-5696

Issued in accordance with the provisions of ORS 449.083 (Recodified as 468.740) and Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500, Oct. 18, 1972 (33 U.S.C. § 1251 et seq.) (Hereinafter referred to as the "Federal Act").

Issued to:
The North Unit Irrigation District
Route 2, Box 1224
Madras, Oregon 97741

Plant Site:

Issued by the Department of Environmental Quality

Reference Information

File Number: 61835
Appl. No.: OR-002671-9 Received 10-1-73
Major Basin: Deschutes
Minor Basin:
Receiving Stream: Deschutes & tributaries
River Mile: 87 to 105
County: Jefferson

Permitted Activities

Until such time as this permit expires or is modified or revoked, the North Unit Irrigation District is herewith permitted to:

a. Discharge irrigation return water to the Deschutes River and its tributaries.

b. Construct, operate and maintain waste water control facilities.

All of the above activities must be carried out in conformance with the requirements, limitations and conditions which follow.

All other waste discharges are prohibited.

Special Conditions

S1. Prior to November 1, 1975, the permittee shall submit for approval a program and time schedule for minimizing the discharge of pollutants from the District to the maximum practicable extent by 1985. The program shall:

a. Identify and assess alternative water management control procedures for minimizing the discharge of Suspended Solids to public waters.

b. Identify a reasonably attainable Suspended Solids limitation for each major discharge identified pursuant to Condition S3 of this permit.

c. Identify the appropriate mechanisms for attaining and enforcing Suspended Solids limitations to be stipulated in subsequent NPDES permits.

d. Identify reasonably attainable dates by which each significant implementing action can be achieved.

An annual progress report on achieving these goals shall be submitted each December beginning December 1976.

S2. As much as practicable the permittee shall monitor the use of toxic aquatic weed control chemicals applied to ditches and canals in the District. All water to which the toxic chemicals have been applied shall be disposed of on land without discharge to public waters or otherwise rendered non-toxic to fish or other aquatic life. A record of the chemical application shall be maintained and made available to the Department upon request.

NOTE: For the purposes of this permit the waste water shall be considered non-toxic if there is no mortality to juvenile rainbow trout after 24 hours contact with full-strength waste water, using suitable bioassay techniques.

S3. As soon as practicable, but not later than November 1, 1974, the permittee shall analyze the return flow patterns and submit to the Department for approval a plan for either measuring or providing a reasonable estimate of discharge from the District. The plan shall also include a list of proposed monitoring locations extensive enough to provide representative monitoring of at least ninety (90) per cent of the pollutants discharged from the District.

S4. All significant municipal, industrial, domestic, agricultural (other than irrigation return flow) or other discharges of pollutants into irrigation canals or return flow channels shall be identified and inventoried by the permittee. A listing of the pollutant discharge inventory shall be submitted to the Department as soon as practicable but no later than December 31, 1975.

S5. The permittee is expected to meet the compliance schedules and interim dates which have been established in conditions S1, S3 and S4 of this permit. Either prior to or no later than 14 days following any lapsed compliance date the permittee shall submit to the Department a notice of compliance or non-compliance with the established schedule.

S6. Prior to constructing or modifying any waste water control facilities, detailed plans and specifications shall be approved in writing by the Department.

S7. Notwithstanding the effluent limitations established by this permit, no wastes shall be discharged and no activities shall be conducted after April 1, 1976 which will violate Water Quality Standards as adopted in OAR 340-41-105 except in the following defined mixing zones:

> The allowable mixing zone for the Willow Creek discharge shall include Willow Creek from the point of discharge to its mouth. The turbidity of Willow Creek between river mile 2 and its mouth shall not be increased more than 20 JTU above background levels.
>
> The allowable mixing zone for the Campbell Creek discharge shall include

Campbell Creek from the point of discharge to its mouth plus a 60-foot wide strip of the Deschutes River along the east bank, extending from the mouth of Campbell Creek to 200 feet downstream.

The allowable mixing zone for the Mud Springs Creek discharges shall include Mud Springs Creek from the point of discharge to its confluence with Trout Creek, Trout Creek from Mud Springs Creek to the Deschutes River and that portion of the Deschutes River within a radius of 50 feet from the mouth of Trout Creek. The turbidity of Trout Creek shall not be increased more than 20 JTU above background levels.

The mixing zone at all other points of discharge shall not exceed that portion of each receiving stream within a radius of 100 feet from the point of discharge.

S8. No petroleum-base products or other substances which might cause the Water Quality Standards of the State of Oregon to be violated shall be discharged or otherwise allowed to reach any of the waters of the state. Petroleum-base aquatic weed control chemicals may be applied within the District in accordance with Condition S2.

S9. Beginning as soon as possible but not later than April 1, 1975, the permittee shall monitor the quantity and quality of the supply water and wastes discharged in accordance with procedures approved pursuant to the requirements of Condition S3. A record of all such data shall be maintained and submitted to the Department of Environmental Quality at the end of each calendar month. Unless otherwise agreed to in writing by the Department of Environmental Quality, data collected and submitted shall include but not necessarily be limited to the following parameters and minimum frequencies:

Parameter	Minimum Frequency
Waste Water	
Flow	Weekly
Suspended Solids	Monthly grab sample
Turbidity	Weekly grab sample
Specific Conductance	Weekly grab sample
Supply Water	
Suspended Solids	Monthly grab sample
Turbidity	Weekly grab sample
Specific Conductance	Weekly grab sample
General Comments	
Sources of pollutants affecting the discharges but are not associated with irrigation practices	As they occur

NOTE: In order to establish a possible correlation, monthly Suspended Solids samples shall be taken at the same time and place as the weekly turbidity samples.

S10. Moss, debris and dredgings dislodged or removed from canals and ditches shall be collected as much as practicable and disposed of on land in a manner which will minimize entry into public waters.

S11. Conditions G2a and G3 of the attached General Conditions do not apply to this permit.

General Conditions

G1. All discharges and activities authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

G2. Monitoring procedures:

a. Monitoring shall begin on the first day of the month following issuance of this permit.

b. Monitoring reports shall be submitted by the 15th day of each following month.

c. Monitoring reports shall be submitted on approved NPDES report forms.

d. All records of monitoring activities and results, including all original strip chart recordings for continuous monitoring instrumentation and calibration and maintenance records, shall be retained by the permittee for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the Director.

e. The permittee shall record for each measurement or sample taken pursuant to the requirements of this permit the following information: (1) the date, exact place and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses; (4) the analytical techniques or methods used; and (5) the results of all required analyses.

f. Samples and measurements taken to meet the requirements of this condition shall be representative of the volume and nature of the monitored discharge.

g. All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless approved otherwise in writing by the Department, conform to the latest edition of the following references:

1) American Public Health Association, Standard Methods for the Examination of Water and Wastewaters (13th ed. 1971).

2) American Society for Testing and Materials, A.S.T.M. Standards, Part 23, Water, Atmospheric Analysis (1970).

3) Environmental Protection Agency, Water Quality Office, Analytical Control Laboratory, Methods for Chemical Analysis of Water and Wastes (April, 1971).

G3. All waste solids, including dredgings and sludges, shall be utilized or disposed of in a manner which will prevent their entry, or the entry of contaminated drainage or leachate therefrom, into the waters of the state and such that health hazards and nuisance conditions are not created.

G4. The diversion or bypass of any discharge from facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit is prohibited, except (a) where unavoidable to prevent loss of life or severe property damage or (b) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the terms and conditions of this permit. The permittee shall immediately notify the Department in writing of each such diversion or bypass in accordance with the procedure specified in Condition G12.

G5. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

G6. Whenever a facility expansion, production increase or process modification is anticipated which will result in a change in the character of pollutants to be discharged or which will result in a new or increased discharge that will exceed the conditions of this permit, a new application must be submitted together with the necessary reports, plans and specifications for the proposed changes. No change shall be made until plans have been approved and a new permit or permit modification has been issued.

G7. After notice and opportunity for a hearing this permit may be modified, suspended or revoked in whole or in part during its term for cause including but not limited to the following:

a. Violation of any terms or conditions of this permit or any applicable rule, standard, or order of the Commission;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in the condition of the receiving waters or any other condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

G8. If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Act for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee shall be so notified.

G9. The permittee shall, at all reasonable times, allow authorized representatives of the Department of Environmental Quality:

a. To enter upon the permittee's premises where an effluent source or disposal system is located or in which any records are required to be kept under the terms and conditions of this permit;

b. To have access to and copy any records required to be kept under the terms and conditions of this permit;

c. To inspect any monitoring equipment or monitoring method required by this permit; or

d. To sample any discharge of pollutants.

G10. The permittee shall maintain in good working order and operate as efficiently as practicable all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

G11. The Department of Environmental Quality, its officers, agents and employees shall not sustain any liability on account of the issuance of this permit or on account of the construction or maintenance of facilities because of this permit.

G12. In the event the permittee is unable to comply with all of the conditions of this permit because of a breakdown of equipment or facilities, an accident caused by human error or negligence, or any other cause such as an act of nature, the permittee shall:

a. Immediately take action to stop, contain and clean up the unauthorized discharges and correct the problem.

b. Immediately notify the Department of Environmental Quality so that an investigation can be made to evaluate the impact and the corrective action taken and determine additional action that must be taken.

c. Submit a detailed written report describing the breakdown, the actual quantity and quality of resulting waste discharges, corrective action taken, steps taken to prevent a recurrence and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for failure to comply.

APPENDIX A

13. SOUTH DAKOTA

13.1 SUMMARY OF WATER QUALITY LAWS

13.1.1 Background

South Dakota has had a comprehensive body of law controlling water pollution since 1935 (S.D.L. § 46-25-1 to 46-25-17, Repealed by S.L. 1973 ch. 280, § 21). Known as the State Water Pollution Control Act, an interagency committee on water pollution was created consisting of the State Health Officer, the Chief Engineer of the Water Resources Commission, the Director of the Department of Game, Fish, and Parks, and four representatives of water user groups appointed by the Governor (*Ibid.*).

The committee was authorized to classify water courses, investigate sources of pollution, aid in the construction of public water pollution control projects, and to take administrative and judicial action to enforce provisions of the Act (Ibid.). The legislation was amended in 1955, 1960, and 1966 and finally superseded by the enactment which created the Board and Department of Environmental Protection (S.L. 1973, ch. 280). By Executive Order, which later became ch. 2 SL 1973, the Secretary of Environmental Protection succeeded to the powers of the Director of the Division of Sanitary Engineering and the Board of Environmental Protection succeeded to the powers of the Water Pollution Control Commission.

13.1.2 Policy

In adopting the most recent version of state water quality legislation, the South Dakota Legislature found that water pollution is a public nuisance and is harmful to legitimate beneficial uses of water including agriculture (S.D.L. § 46-25-23, Supp. 1976). The Act further states that it is the public policy of the State . . .

> to conserve the waters of the state and to protect, maintain and improve the quality thereof for water supplies, for the propagation of wildlife, fish and aquatic life, and for domestic, agricultural, industrial, recreational and other legitimate uses; to provide that no waste be discharged into any waters of the state without first receiving the necessary treatment or other corrective action . . . (*Ibid.*).

Another section of the Act goes on to provide that "The board shall establish policy for prevention, control and abatement of new or existing pollution of water of the state" (S.D.L. § 46-25-29). The above section is one of the broadest delegations of policy making authority from legislative to administrative level of any of the states considered in this analysis.

13.1.3 Classification

The Board of Environmental Protection is directed to "establish and modify the classification of all waters in accordance with their present and future most beneficial uses" (S.D.L. § 46-25-32). These classifications are to be reviewed at intervals not to exceed three years (S.D.L. § 46-25-35).

The 1935 act gave the Committee on Water Pollution the authority to classify state waters as either being "Class A" or "Class B" waters. The distinction between these two classifications was as follows:

> *Class A* - waters where the pollution could be controlled in such a manner that the receiving water would not be unfit for domestic use, fish or plant life, as a source of public water supply, and would not cause a public nuisance.
>
> *Class B* - waters which are suitable as carriers for waste, providing such wastes are not detrimental to public health.

In the 1973 act, the classification of public waters adopted by the Committee on Water Pollution was adopted by reference and is to remain effective as if they had been passed on by the Board of Environmental Protection (S.D.L. § 46-25-31). Although the earlier act was expressly repealed in the new legislation, the policies of that act which were preserved by agency rules and standards have been perpetuated in the 1973 legislation.

13.1.4 Standards

The Board is authorized to issue standards for: (1) Water Quality; (2) Effluent Discharges; (3) Pretreatment Standards for Industrial Users of Inadequate Public Treatment Works (S.D.L. §§ 46-25-33, 46-25-34 and 46-25-34.1). These standards are subject to review every three years (S.D.L. § 46-25-35).

Earlier standards formulated by the Committee on Water Pollution were likewise adopted by reference in the 1973 Act (S.D.L. § 46-25-31). The most comprehensive set of such standards is contained in South Dakota Board of Environmental Protection, *Surface Water Quality Standards*, Ch. 34:04:02 (1975).

The South Dakota Board of Environmental Protection has adopted specific water quality parameters for irrigation waters. The specific areas covered by these regulations are as follows:

> (1) Coliform organisms shall not exceed a MPN or MF of five thousand per one hundred milliliters, as a geometric mean based on not less than five samples obtained during separate 24-hour periods during any 30-day period, nor shall the number exceed ten thousand per one hundred milliliters in any one sample.
> (2) Fecal Coliform organisms shall not exceed one thousand per one hundred milliliters as a geometric mean based on not less than 5 samples obtained during separate 24-hour periods during any 30-day period; nor shall the number exceed two thousand per one hundred milliliters in any one sample.
> (3) Total dissolved solids shall not exceed 1500 milligrams per liter with a variation allowed under Section 34:04:02:32(3).
> (4) Conductivity shall not exceed 2500 micromohs/cm. at 25 degrees C with a variation allowed under Section 34:04:02:32(3).
> (5) The sodium absorption ration shall not exceed 10 with a variation allowed under Section 34:04:02:32(3). S.D. Board of Environmental Protection (*Surface Water Quality Standards*, ch. 34:04:02:43, 1975).

The above criteria for irrigation waters is applicable only from May 15 to September 30 (Ibid.). Also, the criteria for coliform and fecal coliform organisms is applicable only to water used to irrigate root crops or irrigation areas (Ibid.).

13.1.5 Permit System

It is unlawful to cause water pollution or to discharge waste which lowers water quality below that level existing on March 27, 1973, in South Dakota (S.D.L. §§ 46-25-39 and 46-25-40). Violation of either of these provisions is actionable as a public nuisance (S.D.L. § 46-25-41).

Despite the above prohibitions, discharge of wastes is allowed if the discharge will not result in the violations of water quality standards and is found by a majority of the Board to be justifiable as a result of necessary economic or social development (S.D.L. § 46-25-42). If such a finding is made, the Board is authorized to issue a permit, which is reviewable every two years, for the discharge (S.D.L. § 46-25-44). The Board is given the authority to adopt rules controlling the application for and issuance of discharge permits (S.D.L. § 46-25-46).

A permit from the Board of Environmental Protection is required for the discharge of wastes due to the following activities:

> (1) construction and operation of any disposal system;
> (2) an increase in the strength or volume of waste discharged from a previously approved facility;
> (3) construction and operation of an industrial establishment which would discharge wastes that would alter water quality parameters; or
> (4) construction of any new outlet for the discharge of wastes into state waters (S.D.L. § 46-25-45).

Administration of the permit system is delegated to the Secretary of the Board of Environmental Protection (S.D.L. §§ 46-25-55 to 46-25-57).

South Dakota has not adopted the NPDES program to date. However, the Board has also proposed an extensive set of regulations to implement the NPDES program (South Dakota Board of Environmental Protection, NPDES Permit Regulations, Ch. 34:04:06, 1975). The provision of these proposed regulations concerning "Discharge of irrigation return flow" are discussed in section 13.5 of this report.

13.1.6 Sanctions and Enforcement Measures

The South Dakota legislation provides for both criminal and civil penalties for violation of its provisions. A fine of up to twenty-five thousand dollars per day of violation can be assessed, or imprisonment for one year, or both can be set for violation of the statute or permit conditions (S.D.L. § 46-25-91). Civil penalties for violation of the statute or permit conditions cannot exceed ten thousand dollars for each day of violation (S.D.L. § 46-25-92). The punishment for knowingly making false statements, or tampering with monitoring devices, is a fine of up to ten thousand dollars, or six months imprisonment, or both (S.D.L. § 46-25-93). The Board can also seek equitable relief by filing an action for an injunction against the continuation of any alleged violation which has been the basis for the suspension or revocation of a permit by the Secretary (S.D.L. § 46-25-89). Administrative enforcement of the Act is vested with the Secretary of Environmental Protection, who issues orders following formal hearings, or in emergency situations without hearings, to prevent, abate, or control pollution (S.D.L. §§ 46-25-76 and 46-25-84). After formal notice has been given, the Secretary has authority to revoke, suspend or modify discharge permits for violation or misrepresentation (S.D.L. § 46-25-66). The Secretary can also initiate action for the recovery of criminal penalties against convicted violators (S.D.L. § 46-25-90). Finally, the Secretary can bring suit in district court to restrain persons allegedly discharging pollutants if it presents an imminent threat to public health (S.D.L. § 46-25-88). All administrative action taken by the Secretary is subject to judicial review (S.D.L. § 46-25-79).

South Dakota law allows an action to be filed in circuit court seeking declaratory and equitable relief against political subdivisions or private parties for the alleged violation of laws "for the protection of the air, water and other natural resources and the public trust therein from pollution, impairment or destruction" (S.D.L. § 21-10A-1). The following parties have standing to bring such an action under the "South Dakota Environmental Protection Act of 1973":

> The attorney general, any political subdivision of the state, any instrumentality or agency of the state or of a political subdivision thereof, any person, partnership, corporation, association, organization or other legal entity . . . (Ibid.).

13.2 ADMINISTRATION OF THE LAWS

13.2.1 Board of Environmental Protection--Department of Environmental Protection

The "lead agency for the implementation of water quality control in South Dakota is the Board of Environmental Protection, which functions as the policy body"(S.D.L. § 46-25-29). The Board of Environmental Protection consists of seven members appointed by the Governor to sit as representatives of various interest groups and the general public (S.D.L. § 1-38-4). The law also provides for the creation of a Department of Environmental Protection whose administrative head is the Secretary of Environmental Protection (S.D.L.§§ 1-38-1 to 1-38-2). Figure 1 shows the organization of this Department.

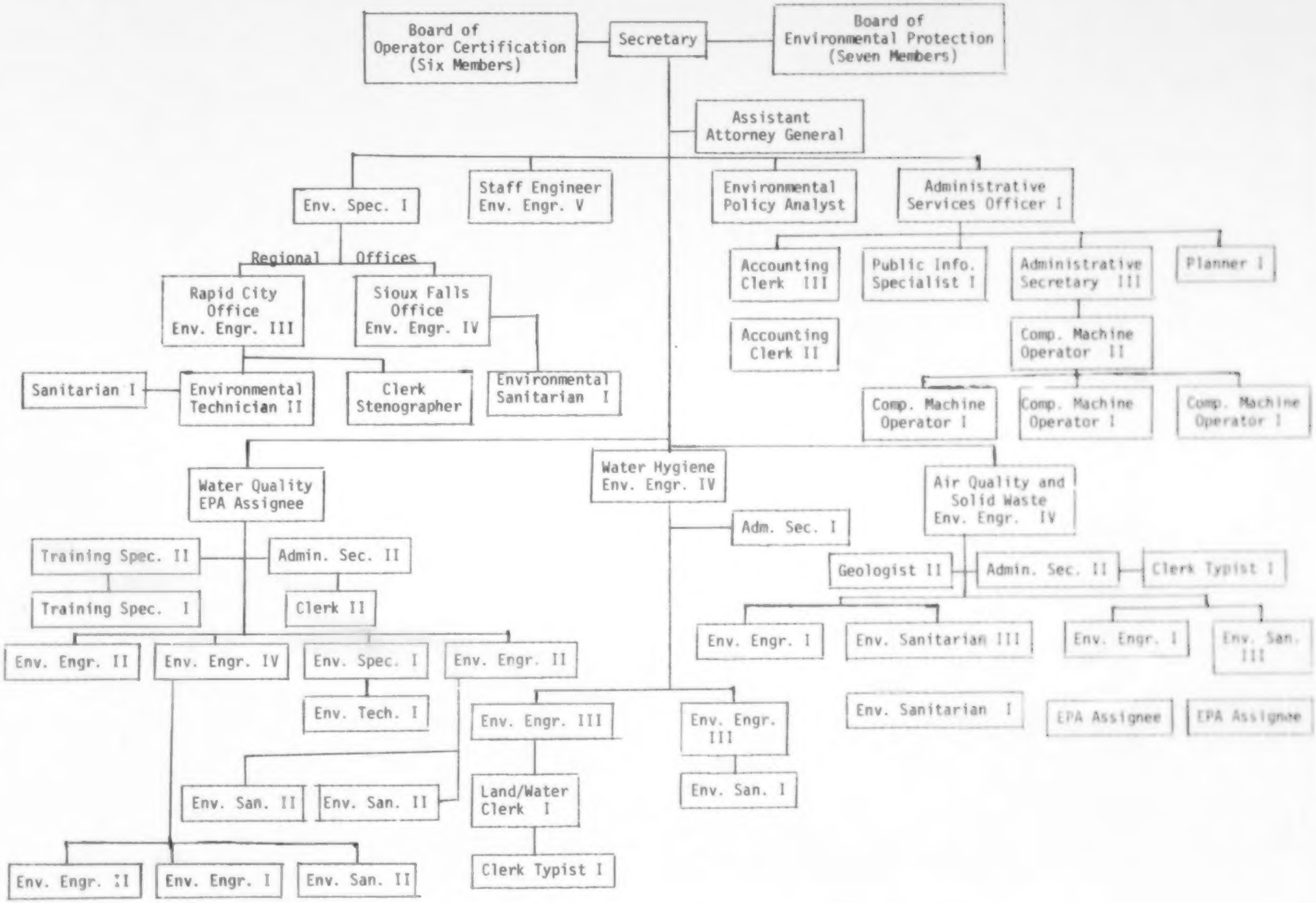
13.2.2 Department of Natural Resources Development

South Dakota water law provides:

> A landowner may not prevent the natural flow of the stream, or of the natural spring from which it commences its definite course, or of a natural spring arising on his land which flows into and constitutes a part of the water supply of a natural stream, nor pollute the same . . . (S.D.L. § 46-5-1, emphasis added).

Administration of the above section and others pertaining to the appropriation of water in South Dakota is vested with the Water Rights Commission, which exercises its powers as a division of the Department of Natural Resource Development (S.D.L. § 1-40-4). The Department of Natural Resource Development was created in 1973 as the result of an executive reorganization of state government(Garton, 1976). Figure 2 reflects the Department's organizational structure.

Figure 1. Organization of the Department of Environmental Protection



The purpose of the Department of Natural Resource Development is to research, promote, plan and implement multiple purpose natural resource projects and programs with particular emphasis being placed on development for economic benefits. The department is comprised of six formerly separate agencies and for the first time South Dakota is able to view the development of its natural resources from a comprehensive viewpoint.

The department is organized into four divisions: Geological Survey, Resource Management, Water Rights, and Weather Modification. Each of the divisions, except Geological Survey, is headed by a director appointed and removable by the Secretary for a four year term and is removable for cause only.

A newly formed Board of Natural Resource Development acts as the principal policy authority for the department. The Board consists of seven persons serving four year staggered terms. The Board exercises the functions of the former Water Resources Commission with respect to water projects development and coordination, the Board of Directors of the Conservancy District and the Water Projects Formulation and Finance Committee with respect to water projects planning and development, and the Oil and Gas Board with respect to the development and regulation of oil and gas production. The latter three boards were abolished. In sum, the Board is responsible for reviewing and approving water development plans and projects, supervising special resource project districts, supervising oil and gas production and establishing overall policy for the development of natural resources.

The Division of Geological Survey conducts ground water and mineral studies for counties, municipalities and rural water districts, supervises the drilling and production of oil and gas in the state and performs geologic mapping and special geological investigations.

The Division of Resource Management is responsible for developing and implementing overall plans for the development of the resources of the state. Particular emphasis is presently placed on the development of the State Water Plan and the selection of water projects for implementation. As discussed in conjunction with the State Planning Bureau, the water planning process has been altered through reorganization to insure input from all viewpoints concerned with the use of the natural resources. The division also supervises local drainage, irrigation, watershed and water conservancy districts and conservancy subdistricts. This division also is responsible for reviewing and commenting on federal water projects and interstate planning, coordination and development.

The Division of Water Rights is responsible for granting rights to the use of surface and ground waters and regulating the use of that water. The Water Rights Commission (former Water Resources Commission) is attached to the division and exercises quasi-legislative and quasi-judicial authority with respect to granting water rights. This involves promulgating rules to govern the issuance of rights, granting rights to the use of water and adjudicating disputes arising over water rights.

The Division of Weather Modification is responsible for administering a weather modification program to increase precipitation and suppress hail occurrence, to evaluate the effect of such program, and to research and develop scientific data and methods to improve the effectiveness of the program. The Weather Modification Commission is attached to the division and continues to provide policy direction and regulation of weather modification operators (Memo from Mr. Vern W. Butler, Secretary, Dept. of Natural Resource Development, dated Feb. 20, 1974).

13.4 RELATED LEGISLATION

13.4.1 Irrigation Districts

An extensive body of law is concerned with the organization, operation and financing of irrigation districts in South Dakota. Creation of districts is accomplished by submission of a petition to the board of county commissioners where the proposed district will be located (S.D.L. §§ 46-12-1 to 46-12-7, 1973). An election is then held to approve the formation of the district and for selection of a board of directors (S.D.L. §§ 46-12-15 to 46-12-40).

In operation of irrigation districts, the board of directors have the authority to exercise the power of eminent domain to acquire property, to construct necessary water delivery works, to contract with the Federal government for construction, operation and maintenance of works and to contract with water conservancy districts for delivery of water (S.D.L. §§ 46-13-1 to 46-13-22). Irrigation District board of directors are required to submit reports and recommendations to the Water Rights Commission of the Department of Natural Resources Development (S.D.L. § 46-13-30).

Financing is provided by the issuance of assessment bonds or Federal cost-sharing (S.D.L. § 46-14-49). Repayment of bonded indebtedness is achieved by assessments levied by the board of directors based on the apportionment of benefits to irrigated land (S.D.L. §§ 46-15-1 to 46-15-46).

13.4.2 Water Conservancy Districts

Water Conservancy Districts are formed for the purpose of construction of systems of works, conservation, storage distribution and utilization of water (S.D.L. § 46-16-1, 1973). Formation of the district is initiated by filing of a petition with the Water Rights Commission of the Department of Natural Resources Development, followed by an election to approve the formation and selection of a board of directors (S.D.L. §§ 46-16-3 to 46-16-28, 1973).

The board of directors have broad powers to acquire property, undertake construction of works and financing (S.D.L. §§ 46-16-38 to 46-16-54, 1973). The board can also set rates and charges for delivery of water from district systems (S.D.L. § 46-16-59, 1973).

13.4.3 South Dakota Conservancy District and Subdivisions

By an act of the South Dakota Legislature, the entire state has been organized into a single district called the "South Dakota Conservancy District." Although the creation of such a structure is for purposes related to the conservation and development of water resources, the prime factor in creating the district was to provide a means whereby the state could lend financial assistance to local water development programs across political boundaries (S.D.L. §§ 46-17-1 to 46-17-4, 1973). The Water Rights Commission functions as the district board of directors (S.D.L. § 46-17-5, 1973).

Conservancy Subdistricts can be established and their operation and financing is according to the earlier section on Water Conservancy Districts (S.D.L. §§ 46-18-1 to 46-18-48, 1973).

13.4.4 Watershed Districts

Watershed Districts are formed for the purposes of conservation of natural resources, flood control and "protection of the public health and welfare and the provident use of the natural resources" (S.D.L. § 46-24-1, 1973). Formation of watershed districts is done by having the local Soil and Water Conservation District conduct hearings on the feasibility of creating a watershed district within the area administered by the Soil and Water Conservation District (S.D.L. § 46-24-3, 1973). A referendum on approval of the district is held and a board of managers is elected (S.D.L. §§ 46-24-18 to 46-24-32, 1973). The board of managers has the power to assess and collect taxes, borrow funds, and condemn private property (S.D.L. § 46-24-33, 1973).

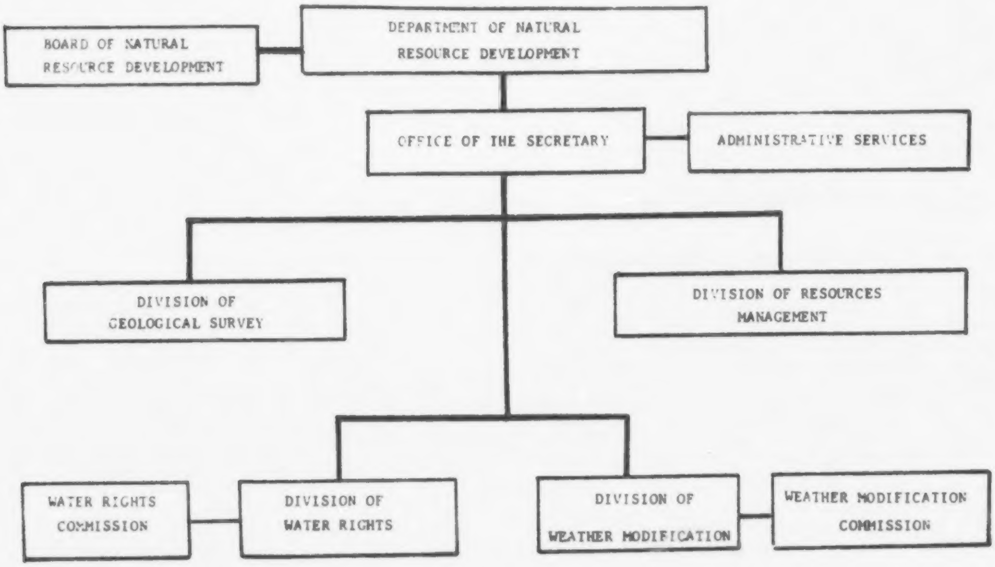
13.4.5 South Dakota Environmental Policy Act

All state agencies must prepare an environmental impact statement on any major action they propose or approve which will have a significant effect on the environment (S.D.L. § 11-1A-4). This statement is to be made available to public and private bodies for comment and submitted to the Secretary of the Department of Environmental Protection (S.D.L. § 11-1A-9). Those actions which require the preparation of a statement under the Nation Environmental Policy Act of 1969 are exempt from complying with the state act (S.D.L. § 11-1A-11).

13.4.6 State Development Plan and Planning Commission and Planning Bureau

South Dakota has a comprehensive, state-wide planning effort administered by the State Planning Bureau and headed by the State Planning Commissioner (S.D.L. §§ 11-1-2 to 1-2.1). A commission composed of department heads and citizens has been appointed to assist the State Planning Commissioner (S.D.L. §§ 11-1-3 to 1-3.1). Locally, planning is undertaken by planning and development districts which are area-wide planning organizations comprised of several political subdivisions and responsible for planning in a specific geographical area (S.D.L. § 11-1-1).

Figure 2. Organization of Department of Natural Resource Development


BOARD OF NATURAL RESOURCE DEVELOPMENT
DEPARTMENT OF NATURAL RESOURCE DEVELOPMENT
OFFICE OF THE SECRETARY
ADMINISTRATIVE SERVICES
DIVISION OF GEOLOGICAL SURVEY
DIVISION OF RESOURCES MANAGEMENT
WATER RIGHTS COMMISSION
DIVISION OF WATER RIGHTS
DIVISION OF WEATHER MODIFICATION
WEATHER MODIFICATION COMMISSION

13.4.7 Public and Private Nuisances

Water pollution is considered to be actionable as a public or private nuisance under South Dakota law (S.D.L. § 21-10-3, 1973). This provision was upheld in the case of Watson v. Great Lakes Pipeline Co. (85 S.D. 176, 179 N.W.2d 15, 1970), where the court found that the pumping from defendant's tank farm had polluted water in adjacent wells and in time would constitute a public nuisance.

13.5 SUMMARY OF REGULATIONS

Aside from the regulations in the water quality standards (S.D. Regulations 34:04:02:43), South Dakota has not adopted any regulations specifically pertaining to irrigation return flows. The water quality regulations, incidentally, pertain to the recovery waters and not the return flows. However, the Board of Environmental Protection did adopt NPDES permit regulations for the purpose of a public hearing which contains significant reference to irrigation return flow. The keys are that as a general rule, "Discharge of pollutants from agricultural and silvicultural activities, including irrigation return flow and runoff from orchards, cultivated crops, pastures, rangelands, and forest lands, will not require an NPDES permit provided such discharge does not fall under the requirements of sections 34 R.606 to 34R.611, inclusive" (S.D. Proposed, NPDES Permit Regulations, ch. 34:04:06:05, 1975). Discharges from irrigation return flow do require permits, described as follows:

> Discharges of irrigation return flow, including but not limited to tailwaters, tile drainage flow, surfaced ground water flow, and bypass water if there is a point source of discharge, whether natural or artificial, and the return flow is from land areas of more than one hundred sixty contiguous acres, or one hundred sixty noncontiguous acres which use the same drainage system (S.D. Board of Environmental Protection, NPDES Permit Regulations, ch. 34:04:06:09, 1975).

Finally, the Secretary of the Department of Environmental Quality has the authority to require a permit under the NPDES system if the agricultural activity is causing a violation of Surface Water Quality Standards, as set out in 34:04:02 to 34:04:04 and the activity is of a continuing nature (S.D. Board of Environmental Protection, NPDES Permit Regulations, ch. 34:04:06:10, 1975). As of 1 January 1977, these regulations have not been officially adopted.

13.6 CASE LAW APPLICABLE TO AGRICULTURE

No cases in South Dakota have been reported which have found that an appropriative right had a quality component. The main focus of water rights cases has been whether legislation establishing the doctrine of prior appropriation in South Dakota is constitutional and whether that legislation abridges vested riparian rights. Although South Dakota's first appropriation statute was struck down in 1913 for depriving the riparian owners of artesian wells of property without due process (St. Germain Irrigating Co. v. Hawthorn Ditch Co., 32 S.D. 466, 143 N.W. 124, 1913) the 1955 act was subsequently sustained after express recognition was given to the protection of vested rights (Knight v. Grimes, 80 S.D. 517, 127 N.W.2d 708, 1964). Based on this pattern of judicial decisions, riparian rights would still be measured by the doctrine of reasonable use and the various aspects of appropriative rights, including quality, have yet to be defined by South Dakota courts.

No cases have been reported at this time which involve the duties of the Board and Department of Environmental Protection in the area of water quality control.

13.7 INFORMATION SOURCES

Christensen, Gary L., "South Dakota's Water Conservancy District Law," Note, 7 S.D.L. Rev. 157 (1962).

Garton, Max A.,"South Dakota's System of Water Management and Its Relation to Land Use and Economic Development," 21 S.D.L. Rev. 1 (1976).

Gors, Max A., "Law of Water Distribution in Iowa and South Dakota: A Comparison of the Riparian and Appropriation Systems," 20 Drake L. Rev. 256 (1971).

Mattson, John, "Water Rights and the Constitutionality of the 1955 South Dakota Water Act," Note, 11 S.D.L. Rev. 374 (1966).

Munro, James, "South Dakota and the Water Impasse," 11 S.D.L. Rev. 255 (1966).

APPENDIX A

14 TEXAS

14.1 SUMMARY OF WATER QUALITY LAWS

14.1.1 Background

The first legislation enacted in Texas relating to water quality appeared in 1913. By an act of the 33rd Legislature of the State of Texas, the Board of Water Engineers was created and given the authority to develop and conserve the State's water resources and to supervise the use and distribution of the public waters of the State (General Laws, Chapter 171, April 9, 1913). Four years later, the 35th Legislature designated this Board as the trustee of the surface water resources of the State of Texas.

In 1913, a statute was enacted which forbade the deposition of crude petroleum or oil into any watercourse (Acts 1913, 33rd Leg., p. 90, ch. 47, § 2,4). This statute also prohibited the pollution of any water which was used for livestock, drinking or domestic purposes by the discharge of any sewage, unclean water or unclean or polluting matter. If the pollution affected aquatic life, the Game, Fish, and Oyster Commission was given the power to enforce this act by means of an injunction (See also Acts 1915, 34th Leg., p. 38, ch. 23, § 1 and Acts 1923, 38th Leg., p. 177, ch. 85, § 1). In all other instances, the enforcement of this statute was in the hands of the State Board of Health (*Ibid.*).[1] In *City v. Turner* (237 S.W. 635, Texas, 1951), the Texas Supreme Court held that a suit brought under this statute required the joinder of the State Board of Health as a necessary party.

The Texas Legislature also enacted a statute in 1913 which gave qualified cities the full power of local self-government (Acts 1913, 33rd Leg., p. 303, § 4).[2] Section 19 of this statute gave each city the power to define and prohibit nuisances and the pollution of any stream, drain or tributary which was a source of supply for the city (amended by Acts 1967, 60th Leg., p. 189, ch. 100, § 1, eff Aug. 28, 1967).

A statute which prohibited the depositing of "the carcass of any dead animal, tin cans, discarded buckets or pails, garbage, ashes, baling or barbed wire, earth, offal, or refuse of any character (into) any canal, lateral, reservoir or lake" was enacted in 1917 (Acts 1917, 35th Leg., ch. 88, p. 211, § 70). Violation of this statute carried a fine of not less than ten, nor more than one hundred dollars, or imprisonment for a term not to exceed six months, or both. This statute was subsequently repealed in 1961 (Repealed, Acts 1961, 57th Leg., 1st C.S., p. 156, ch. 42, § 114, eff. Nov. 1, 1962).

The year 1917 also led to the adoption of § 59 to Article 16 of the Texas Constitution. This article gave the Legislature the power to enact statutes to effectuate the conservation and development of all the natural resources of the state and provided for the creation of conservation and reclamation districts. Public rights and duties in this amendment included the right to control, store, preserve and distribute the waters of rivers and streams for irrigation purposes. Rights under this amendment were further delineated to allow for the reclamation and irrigation of arid and semi-arid lands, and for the reclamation of lands needing drainage.

Pollution was first defined in the Texas Penal Code in 1948, as the:

> throwing, or discharging . . . into any public body of surface water of this State any substance, material, or thing in such quantity that the said water is thereby rendered unfit for one or more of the beneficial uses for which the water was fit or suitable prior to the introduction of such substance, material, or thing, or is thereby rendered harmful to public health, game birds or game animals (Texas Penal Code (Vernon 1948), art. 698 b § 2).

This statute expressly repealed article 697, which was passed in 1860, and articles 698 and 698a.

In 1949, the 51st Legislature of Texas created the Texas Interim Water Code Committee to make a thorough study of the water laws of the state and to report its findings with recommendations regarding revisions of the water laws to the governor and the 52nd Legislature.[3]

The 53rd Legislature in 1953 created the Water Pollution Advisory Council and set forth the public policy of the state "to conserve its waters for public water supply for domestic, municipal, *agricultural*, industrial, recreational, for the propagation of fish and aquatic life, and other beneficial uses *by establishing a more comprehensive program in the public interest for the prevention, abatement and control of pollution*." (Emphasis added; Acts 1953, 53rd Leg., p. 868, ch. 353; Repealed by Acts of 1961, 57th Leg., 1st C.S. p. 156, ch. 42, § 114 eff. Nov. 1, 1962).

The chief water pollution control agency in Texas in 1955 was the State Department of Health, which shared its responsibilities with the Game and Fish Commission, home rule cities and water improvement and conservation districts (Taylor, p. 376, 1955). The Department's jurisdiction was state-wide and covered the pollution of every watercourse.

The Water Pollution Control Board was created by the Water Pollution Control Act of 1961. This Board was given the power to regulate the discharge of sewage effluents (T.C.A. art. 7621(d), Vernon Supp. 1965). This Act was amended four years later to give the Railroad Commission sole responsibility for "the control and disposition of waters and the abatement and prevention of pollution of water (both surface and subsurface) resulting from activities associated with the exploration, development, or production of oil or gas" (T.C.A. Art. 7621(d) § 10(c)4, Vernon Supp. 1965, as amended, Acts, 59th Leg. 1965, ch. 382 p. 705; art. 7621(d) was repealed by Acts 1967, 60th Leg. p. 758, ch. 313 § 23, effective Sept. 1, 1967).

---

[1] See also Art. 7621(d) T.C.A. (Vernon Supp. 1965).

[2] See also Art. 1175 Vernon's Texas Civil Statutes, vol. 2B.

[3] Senate Concurrent Resolution No. 36 Texas Laws 1949, p. 1393. This committee rewrote chapter 1 of Title 128 Tex. Civ. Stat. (Vernon 1948), art. 7466 *et. seq*. The House never took any action on this recommendation (See Milstead, 1951).

The Board of Water Engineers that was created in 1913 had its name changed to the Texas Water Commission in 1962 in the Third Called Session of the 59th Legislature. The 59th Legislature realigned the function of the state water agencies in 1965. The Texas Water Commission was renamed the Texas Water Rights Commission and was given the rights and duties previously held by the Board of Water Engineers and the Texas Water Commission. Thus, the Texas Water Rights Commission was expressly created to "regulate the uses and conservation of water resources declared to be the property of the State of Texas" (Rules, Texas Water Rights Commission, 129.01.01.001, 1976).[4]

The primary impetus for adopting water quality standards in Texas was the enactment of the Federal Water Pollution Control Act of 1965 (33 U.S.C. § 466). This Act required all states to adopt standards for interstate water (334 S.C. § 466(g)c(2)). Under the shadow of this legislation, the Texas Water Quality Act of 1967 created the Texas Water Quality Board and gave it the power to promulgate standards for all Texas waters (T.C.A. § 21.075, Acts 1967, 60th Leg. p. 745, ch. 313; Acts 1969, 61st Leg. p. 2229, ch. 760, § 1 T.C.A. art. 7627 d-1 § 1.02). On June 26, 1967, water quality standards were adopted by the Board and then later approved by the Secretary of the Interior on January 27, 1968 (Texas Water Quality Board and U.S. Dept. of the Interior, Water Quality Standards, Summary 17, 1969).

Before the enactment of statutes dealing with water quality and the pollution of waters, suits against water polluters found their basis in the common-law doctrines of negligence and nuisance actions. If the plaintiff alleged injury to private property or a personal injury, he then had to demonstrate to the court that the defendant was negligent. Thus, a plaintiff had to prove negligence before he could recover damages (Turner v. Big Lake Oil Co., 128 Tex. 155, 96 S.W. 2d 221, 1936). The proof of negligence can be accomplished by showing that the upstream polluter had failed to warn downstream users about his pollution and its potential dangers (American Cyanamid Co. v. Sparto, 267 F. 2d 245, 5th Cir. 1959). Proving negligence is unnecessary when the plaintiff can show negligence per se, i.e., where the defendant's pollution was in violation of a regulation or statute (Texas Penal Code Annotated, article 698 c § 3.4 Supp. 1969).

If the plaintiff's injury is the result of a single act of pollution, the proper relief is for damages. However, if the pollution is continuous, or there is a threat of serious injury, the proper remedy would be an injunction (Carssow, 1970).

In a nuisance action, the plaintiff need not prove that the defendant failed to use reasonable care (Humble Pipe Line Co. v. Anderson, 339 S.W. 2d 259, Texas, 1960). The plaintiff must show that the nuisance has caused or will cause injury peculiar to him (Parker v. Fort Worth, 281 S.W. 2d 721, Texas, 1955). However, if the injury is to the public in general and no individual sustains special injury, only governmental entities have standing to sue the polluter (Tex. Penal Code Ann., art. 698 c § 2, 3, 4, 14 (b)).

The court will "balance the equities" by weighing the damage to the plaintiff against the value to the community of the defendant's activities in deciding whether an injunction should be issued (Hill v. Villarreal, 383 S.W. 2d 463, Texas, 1964).

No provision in the Texas Water Quality Act is to be construed to affect "the right of any private corporation or individual to pursue any available common-law remedy to abate a condition of pollution or other nuisance or to recover damages" (T.C.A., § 21.263).

14.1.2 Policy

> It is the policy of (the state of Texas) . . . to maintain the quality of water (to a degree which is) consistent with the public health and enjoyment, the propagation and protection of terrestrial and aquatic life, the operation of existing industries and the economic development of the state; to encourage and promote the development and use of regional and area-wide waste collection, disposal needs of the citizens of the state; and to require the use of all reasonable methods to implement this policy (T.C.A. § 21.002).

In order to carry out this policy, the Texas Water Quality Board has been designated by the State Legislature as the principal authority in the State on matters relating to water quality (Rules of Practice and Procedure, Texas Water Quality Board, January 1976, 130.01.12.001). Furthermore, the Board must develop a general comprehensive plan for the control of water quality in the state (T.C.A. § 21.062).

The heart of the Texas Water Quality Act is the general prohibition of pollution. Pollution is defined by the Act as:

> the alteration of the physical, thermal, chemical or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose . . . (T.C.A., § 21.003(1)).

The Water Quality Act further provides that discharges of sewage, municipal waste, recreational waste, agricultural waste or industrial waste are illegal unless authorized by the Water Quality Board (T.C.A. § 21.251).

Agricultural waste is defined by the Water Quality Act as:

> waterborne liquid, gaseous, or solid substances that arise from the agricultural industry and agricultural activities, including without limitation, agricultural animal feeding pens and lots, structures for housing and feeding agricultural animals, and processing facilities for agricultural products. The term "agricultural waste" does not include tail water or runoff water from irrigation, or rainwater runoff from cultivated or cultivated rangeland, pastureland and farmland (Emphasis added; id., § 21.003 (8)).

The Board must also "encourage the voluntary cooperation by the people, cities, industries, associations, agricultural interests and representatives of other interests in preserving the greatest possible utility of water in the state" (T.C.A. § 21.067(1)).

---

[4] Letter from Joe D. Carter, Chairman of the Texas Water Rights Commission, to the principal investigator, February 21, 1975.

In implementing the policy set forth in the Texas Water Quality Act, it is the policy of the Texas Water Quality Board

> that the waters in the State whose existing quality is better than the applicable water quality standards (established by the Board) . . . be maintained at their high quality and no waste discharges may be made which will result in the lowering of the quality of these waters unless . . . it has been demonstrated to the . . . Board that the change is justifiable as a result of desirable economic or social development (Texas Water Quality Standards, Texas Water Quality Board Water Quality Standards, Approved October 25, 1973, Amended October 1974, January 1975, Approved by the EPA February 9, 1976, Environment Reporter, State Water Laws, vol. 2, 921:1001 to 921:1031).

Therefore,

> the Board will not authorize or approve any waste discharge which will result in the quality of any of the waters in the state being reduced below water quality standards without complying with the Federal and State laws applicable to the amendment of water quality standards (Texas Water Quality Standards, § III, p. 1, 1975, See Environment Reporter, State Water Laws, vol. 2, 921:1001 to 1017).

On March 6, 1976, the Texas Water Development Board adopted a broad policy statement in response to the growth in Texas:

> It is the Board's view that population and economic growth of Texas will continue and that continued orderly development of Texas water resources to meet present and increasing future needs is imperative. In meeting the water requirements of the people of Texas, the Board recognizes that it is necessary to plan well so as to provide the necessary water resources while at the same time proper provision is made to protect the environment, in compliance with the Texas and national environmental policy . . . ("Board Adopts . . . ," Water for Texas, 1976, p. 12).

14.1.3 Classification

Surface waters in Texas are classified into four major categories:

1. River Basin Waters - those surface inland waters comprising the major rivers and their tributaries, including listed impounded waters, and including the tidal portion of the river to the extent that it is confined in a channel.
2. Coastal Basin Waters - those surface inland waters, including listed impounded waters, exclusive of 1 above discharging or flowing or otherwise communicating with bays or the gulf including the tidal portion of streams to the extent that they are confined in channels.
3. Bay Waters - all tidal waters exclusive of those included in river basin water, coastal basin waters, and gulf waters.
4. Gulf Waters - those waters which are not included in or form a part of any bay or estuary but which are a part of the open waters of the Gulf of Mexico to the limit of Texas' jurisdiction (Texas Water Quality Standards, § IV, p. 2, 1975. See Environment Reporter, State Water Laws, vol. 2, § 921:1001).

14.1.4 Standards

The Texas Water Quality Board sets water quality standards for the state (T.C.A. § 21.075, Standards Approved Oct. 25, 1973, Approved by the Environmental Protection Agency on Feb. 9, 1976). Water quality standards define the minimum acceptable levels of water quality in all inland and tidal waters of the State. These standards consist of General Criteria, Numerical Criteria, and Water Uses and serve as guidelines for the Board by setting the maximum amount of waste which is tolerable in a given stream. The Board is authorized to hold hearings to establish these standards (T.C.A. § 21.075 to 21.078).

General criteria are applicable to all surface waters of the State at all times to the maximum extent feasible and were established to apply specifically to substances which are attributable to waste discharges or the activities of man as opposed to natural phenomena and are applicable to all surface waters. They are:

1. Taste and odor producing substances shall be limited to concentrations in the waters of the State that will not interfere with the production of potable water by reasonable water treatment methods, or impart palatable flavor to food fish, including shellfish, or result in offensive odors arising from the waters, or otherwise interfere with the reasonable use of the waters.
2. The surface waters of the State shall be maintained so as to be essentially free of floating debris and settleable suspended solids conducive to the production of putrescible sludge deposits or sediment layers which would adversely affect benthic biota or other lawful uses.
3. The surface waters of the State shall be maintained so as to be essentially free of settleable suspended solids conducive to changes in the flow characteristics of stream channels, to the untimely filling of reservoirs and lakes, and which might result in unnecessary dredging costs.
4. The surface waters of the State shall be maintained in an aesthetically attractive condition.
5. There shall be no substantial change in turbidity from ambient conditions due to water discharges.
6. There shall be no foaming or frothing of a persistent nature.
7. There shall be no discharge of radioactive materials in excess of that amount regulated by the Texas Radiation Control Act, Article 4590 (f), Revised Civil Statutes, State of Texas and Texas Regulation for Control of Radiation.
8. The surface waters of the State shall be maintained so that they will not be toxic to man, fish and wildlife, and other terrestrial and aquatic life.

With specific reference to public drinking water supplies, toxic materials not removable by ordinary water treatment techniques shall not exceed those enumerated in U.S. Public Health Service, Drinking Water Standards, 1962 edition, or later revision.

For a general guide, with respect to fish toxicity, receiving waters outside mixing zones should not have a concentration of nonpersistent toxic materials exceeding 1/10 of the 96-hour TLm, where the bioassay is made using fish ingredients to the receiving waters. Similarly, for persistent toxicants, the concentrations should not exceed 1/20 of the 96-hour TLm.

In general, for evaluations of toxicity, bioassay techniques will be selected as suited to the purpose at hand. However, bioassays will be conducted under water quality conditions (temperature, hardness, pH, salinity, dissolved oxygen, etc.) which approximate those of the receiving stream as closely as practical.

9. As detailed studies are completed, limiting nutrients identified, and the feasibility of controlling excessive standing crops of phyto-plankton or other aquatic growths by nutrient standards will be established on the surface waters of the State. Such decisions will be made on a case-by-case basis by the Board after proper hearing and public participation. The establishment of a schedule for decisions as to the need for nutrient standards for specific waters and what standards should be adopted is not feasible at this time.

10. The surface waters of the State shall be maintained so that no oil, grease, or related residue will produce a visible film of oil or globules of grease on the surface, or coat the banks and bottoms of the watercourse (*Texas Water Quality Standards*, § VI, pp. 5-8. See *Environment Reporter*, *State Water Laws*, vol. 2, 921: 1002 and 1003).

Numerical criteria are applicable where specific surface waters have been designated in the standards. These criteria are inapplicable to this study with the exception of pH range parameters which represent maximum and minimum conditions.

The water quality criteria which follow are used as guidelines to determine the suitability of waters of the State for various water uses:

The designation of a segment as desirable for a particular water usage reflects the objective of the Texas Water Quality Board to attain or maintain a quality of water appropriate to a specific water usage for a stream segment (Addendum to Proposed Revisions to *Texas Water Quality Standards*, October 1, 1975).

a. Contact recreation waters

Surface waters suitable for contact recreation shall not exceed a logarithmic mean (geometric mean) fecal coliform content from a representative sampling of not less than 5 samples collected over not more than 30 days, as determined by either multiple-tube fermentation or membrane filter techniques, of 200/100 ml, nor shall more than 10 percent of total samples during any 30-day period exceed 400/100 ml.

Simple compliance with bacteriological standards does not insure that waters are safe for primary contact recreation, such as swimming. Long-standing public health principles mandate that watershed sanitary surveys be conducted in order to adequately evaluate the sanitary hazards potentially present on any natural watercourse.

b. Noncontact recreation waters

Surface waters for general or noncontact recreation should with specific and limited exceptions be suitable for human use in recreation activities not involving significant risks of ingestion. These waters shall not exceed a logarithmic mean (geometric mean) fecal coliform content of 2,000/100 ml and a maximum of 4,000/100 ml in more than 10 percent of the samples except in specified mixing zones adjacent to outfalls.

In waters designated for recreation use other than primary contact recreation, the fecal coliform content should not exceed a logarithmic mean (geometric mean) fecal coliform content of 1,000/100 ml, nor equal or excced 2,000/100 ml in more than 10 percent of the samples, except in specified mixing zones adjacent to outfalls.

c. Domestic raw water supply

It is the goal that the chemical quality of all surface waters used for domestic raw water supply conform to the U.S. Public Health Service, Drinking Water Standards, revised 1962, or latest revision. However, it must be realized that some surface waters are being used that cannot meet these standards. Since in these cases it is the only source available, these surface waters may be deemed suitable for use as a domestic raw water supply, where the chemical constituents do not pose a potential health hazard.

It is desirable that the total coliform content should not exceed 100/100 ml and the fecal coliform content 20/100 ml; however, domestic water supplies should not be considered unacceptable if an adequate number of samples show monthly arithmetic averages for total coliform to be less than 10,000/100 ml and fecal coliform to be less than 2,000/100 m..

The evaluation of raw water cannot be reduced to simply counting bacteria of any kind and the foregoing must be used with judgment and discretion and this paragraph is not intended to limit the responsibilities and authorities of responsible local governments or local health agencies.

d. Irrigation waters (The following standards for irrigation waters were

> proposed in 1975 but have not been adopted by the Texas Water Quality Board).
>
> The suitability of water for irrigation is influenced by:
> (1) the total salt concentration or salinity hazards;
> (2) the total amount of sodium and its relation to other cations (positively charged ion);
> (3) the concentration of boron and other constituents that may be toxic; and
> (4) the bicarbonate content in relation to calcium and magnesium (Texas Water Quality Standards, V, p. 4, 1975).

The suitability of water for irrigation is based on an irrigation water classification system prepared by the USDA salinity laboratory.

These irrigation water classifications are based on the salinity classes which follow.

> Class #1 - low-salinity water can be used for irrigation with most crops on most soils with little likelihood that soil salinity will develop.
> Class #2 - medium-salinity water can be used if a moderate amount of leaching occurs. Plants with moderate salt tolerance can be grown in most cases without special practices for salinity control.
> Class #3 - high-salinity water cannot be used on soil with restricted drainage.
> Class #4 - very-high-salinity water is not suitable for irrigation under ordinary conditions but may be used occasionally under special circumstances. The soil must be adequate, irrigation water must be applied in excess to provide considerable leaching and highly salt-tolerant crops must be selected.

"The SAR (sodium absorption ratio) should not exceed 8 for waters safe for irrigation. Sampling and analytical procedures . . . (should be) adequate for the protection of irrigation waters" (Ibid.).

d. Propagation of fish and wildlife

> The water quality requirements necessary to support the propagation of fish and wildlife are too diverse to be defined by a single set of numerical criteria. Different, but equally desirable, biological communities may have substantially different water quality requirements. Also, the impact of a given chemical or physical component on a biological community can be assessed only when the other components of the system are known since synergistic and antagonistic interactions are common. Determination of the suitability of a stream for the propagation of fish and wildlife is most effectually accomplished by an assessment which considers both the physical-chemical parameters of the stream and the biological community present in the stream.
>
> Specific criteria do exist with respect to shellfish waters. In shellfish areas in the bays and outside the buffer zones, the coliform criteria shall be limited and guided by the U.S. Public Health Service Manual, "Sanitation of Shellfish Growing Areas," 1965 revision, or latest revision (Texas Water Quality Standards, Environment Reporter, State Water Laws, vol. 2, § 921: 1001 et. seq.).

14.1.5 Permit System

The permit system is the heart of the Texas scheme of water pollution control. A permit is defined in the Texas Water Quality Act, § 21.003 (16) as:

> an order issued by the Board in accordance with the procedures prescribed in this chapter establishing the treatment which shall be given to wastes being discharged into or adjacent to any water in the state to preserve and enhance the quality of the water and specifying the conditions under which the discharge may be made.

Unless authorized by a discharge permit, a rule, or a regulation, no person may:

> (1) discharge sewage, municipal waste, agricultural waste, or industrial waste into or adjacent to any water in the state;
> (2) discharge other waste into or adjacent to any water in the state which in itself or in conjunction with any other discharge or activity, causes, continues to cause, or will cause pollution of any of the water in the state . . . (T.C.A. § 21.251, 1 & 2).

Waste is defined by the same Act as, "sewage, industrial waste, municipal waste, recreational waste, agricultural waste, or other waste (T.C.A. § 21.003 (4). Emphasis added). However, the definition of "other waste" does include: "tail water or runoff water from irrigation, or rainwater runoff from cultivated or uncultivated range land, pasture land, and farmland that may cause impairment of the quality of the water in the state" (T.C.A. § 21.003 (10)). Permits to discharge waste into waters of the state are issued by the Texas Water Quality Board (T.C.A. § 21.079). While the Board does have the statutory authority to regulate the quality of irrigation return flows (See T.C.A. § 21.251), they have chosen not to do so (personal interview). Applications for a permit must be submitted to the Board and contain all information required by the Board or its Executive Director.

A public hearing must be held on an application for a permit, or the amendment of a permit (T.C.A. § 21.080). Notice of such a hearing must be given to any person who could be affected.

With each permit, the Board describes the conditions on which it is issued. These conditions include:

1. the duration of the permit;
2. the location of the point of discharge of the waste;
3. the maximum quantity of waste that may be discharged under the permit at any time and from time to time;
4. the character and quality of waste that may be discharged under the permit; and
5. any monitoring and reporting requirements prescribed by the board for the permittee (T.C.A. § 21.081).

A permit does not become a vested right and may be revoked or suspended by the Board if the permittee has failed, or is failing, to comply with the conditions of the permit. This permit is subject to cancellation or suspension under Sec. 21.201 when the operations have been abandoned, or the permit is no longer used by the permittee.

State participation in the National Pollutant Discharge Elimination System (NPDES) pursuant to section 402(b) of the Federal Water Pollution Control Act

(92-500, 86 Stat. 816 (1972); 33 U.S.C. 1251 et. seq.) will not receive approval by the Regional Administrator until the State has developed a continuing planning process pursuant to § 130.41 of the Act. Texas constructed a Continuing Planning Process which directs the development and implementation of water quality management plans (See the State of Texas Continuing Planning Process, prepared by the Texas Water Quality Board, February, 1976). This planning process was adopted June 13, 1973 and was amended to conform to regulation revisions on November 28, 1975 (40 CFR Part 130, 131, to comply with Sec. 208 of the Federal Water Pollution Control Act).

As was stated earlier, the 1972 amendment to Section 401(a) of the Federal Water Pollution Control Act requires an applicant for an NPDES permit, or a state discharge permit, to obtain a certification that the discharge will comply with Sections 301, 302, 306 and 307 of the Federal Act. The Texas Water Quality Board adopted the following certification procedure:

> . . . Certification notice will be published (by the State of Texas) as part of the notice from the Environmental Protection Agency of the intention to issue an NPDES permit when:
> (a) the discharge is authorized by an existing State permit; and
> (b) the applicant seeks no significant increase in the volume of effluent or quantity of pollutants authorized for discharge by the State permit; and
> (c) the effluent requirements of the State permit are consonant with the requirements of Sections 301, 302, 306, and 307 of the Federal Act (See Rules of Practice and Procedure, Texas Water Quality Board, § 130.01. 60.001 & 002, Jan. 1976).

If the application is for a discharge which the State does not allow, or for an increase in quantity of pollutants, a public hearing must be held (Id, § .003). If the certification application is for a discharge which is authorized by a State permit, but does not comply with Federal requirements, notice must be given to the applicant, the Federal Environmental Protection Agency, the state agencies represented on the Texas Water Quality Board, the city, if any, and county whose boundaries include the point of discharge (Id, § .004). This notice must specify the kinds of changes in the State permit requirements which are necessary to make the permit comply with the Federal Act (Ibid.).

When the Texas Water Quality Board has certified a National Pollution Discharge Elimination System permit, it may upon notice to the applicant amend the Texas State permit to conform to the NPDES permit (Id, § .005).

On July 12, 1976 the Environmental Protection Agency issued regulations which require general rather than individual water pollution control permits for agricultural activities defined as point sources (40 CFR 124, 125, 41 FR 28493, issued July 12th Environmental Reporter, Current Developments, vol. 7, Number 111, July 16, 1976). These regulations define a point source in the agricultural category as "any discernible, confined and discrete conveyance from which any irrigation return flow is discharged into navigable waters." Specifically excluded from these regulations are water pollution from agricultural and silvicultural activities, including runoff from orchards, cultivated crops, pastures, rangelands and forest lands.

Criteria which relate to water quality and irrigation return flows are also found in the requirements for a permit to appropriate waters. In an application for a permit to appropriate water, the applicant may be required to submit evidence to the Texas Water Rights Commission which will assist the Commission in assessing the environmental, social and economic impacts of the proposed project Rules, Texas Water Rights Commission, 1976, 129.03.25.008). In addition, the applicant must describe the location where return or surplus water will be returned to the stream (Id, § 129.02.15.008).

As of the date of this report, Texas has not enacted the NPDES permit program, nor has the Environmental Protection Agency given approval to the Texas discharge permit program.

14.1.6 Sanctions and Enforcement Measures

The Texas Water Quality Act prohibits the discharge of sewage, municipal waste, recreational waste, agricultural waste, or industrial waste into any water of the State without a permit (T.C.A. § 21.251). The Act further prohibits the discharge of "other wastes" that cause or will cause pollution.

The Water Quality Board has the authority to institute court proceedings to compel compliance with any of its rules, orders, permits, or decisions (T.C.A. § 21.066). The legal means used to curtail proscribed pollution include the use of restraining orders, injunctions, and monetary penalties.

The Board attempts to enforce compliance with the Act through negotiations and voluntary cooperation. If these measures prove unproductive, the Board will issue formal orders which demand that the violator cease his activities (T.C.A. § 21.071).

The Board holds formal hearings to further examine the alleged violation before it refers the case to the Attorney General for prosecution (Carssow, et al., 1970). The hearing is to determine the extent of the violation and to collect information for a possible trial.

If evidence produced at the hearing indicates a violation of the Act, the Board will issue an order to the violator to cease discharging in violation of his permit (T.C.A. § 21.253). If the discharge continues, the case is referred to the Attorney General for initiation of legal proceedings. The Attorney General will then issue a letter to the violator which requests that the violation cease or the consequence will be immediate prosecution (Carssow, et. al., 1970).

As a general practice, the Attorney General will first seek a temporary injunction requesting the court to issue a temporary restraining order to maintain the status quo by limiting the discharge to the level authorized by the permit (Rattikin Title Co. v. Grievance Committee of the State Bar of Texas, 272 S.W. 2d 948, Texas, 1954). If a temporary injunction is obtained and the suit successful, a permanent injunction can then be sought.

The Act provides for penalties ranging from $50 to $1,000 per day for each violation (T.C.A. § 21.252). Further, the Texas Penal Code provides that a discharge of waste into state waters that causes or will cause pollution without a permit is a misdemeanor which is punishable by a fine of $10 to $1,000 (T.C.A. § 21.553).

14.2 ADMINISTRATION OF WATER QUALITY LAWS

14.2.1 Water Quality Control

There are only two agencies in Texas who possess the statutory authority necessary to deal with strong abatement activities. Other agencies exist, but they carry out only minor or specific water quality functions.

The Water Quality Board and the Railroad Commission are the two agencies who are primarily responsible for water pollution control in Texas. Before the Water Quality Board was created, the Health Department had conducted many of the State's water pollution control activities. The Health Department is still responsible for approving construction plans for new public waste disposal plants and for improvements to existing plants (T.C.A. §21.260). The Department also certifies sewage plant operators and conducts monitoring activities over the quality of public drinking water supplies. The Water Quality Act limits the power of the Department to abate those nuisances not covered by the Water Quality Act.

The Texas Water Quality Board is made up of three members appointed by the governor and four ex-officio members who represent other state agencies who are directly concerned with water pollution control (T.C.A. §21.022). The four ex-officio members are the directors of the Water Development Board, the Department of Health, the Parks and Wildlife Department, and the Texas Railroad Commission. Members who are appointed by the Governor hold office for staggered terms of six years (T.C.A. §21.023).

The Water Quality Board's major functions are the promulgation of water quality standards and the issuance and enforcement of discharge permits. Water quality standards define the minimum acceptable levels of water quality and serve as guidelines for the Board in their decisions on permit applications (T.C.A. §21.075). See Figure 1 for the Board's organizational chart.

The Texas Water Quality Board has the power to amend water quality standards if the amendment is preceded by public hearings (T.C.A. §21.075 and .076). The Board also establishes sampling standards with samples being taken monthly at each sampling station (Rules of the Texas Water Quality Board, Sec. 120, 1970).

Upon determining that water quality standards have established a maximum level of waste that each stream segment can withstand according to designated uses, the Board will then regulate the amount of each discharge by the issuance of permits (T.C.A. §21.079).

If the Board accepts an application, it will then schedule a public hearing within 60 days of the date the application was filed (T.C.A. §21.081). Good cause is shown by demonstrating that increased population density along a stream has caused the aggregate discharge limitations to exceed stream standards, or that technological advances have rendered obsolete permits issued under earlier technological conditions (Carssow, 1970).

14.2.2 Additional Agency Involvement

The Railroad Commission regulates injection wells for the disposal of wastes resulting from the production of oil or gas (T.C.A. §21.261). The Commission is solely responsible for the control and disposition of waste and the abatement and prevention of pollution of both surface and subsurface waters which result from activities associated with the development, exploration and production of oil or gas. The Railroad Commission issues permits for the discharge of waste from these activities.

The Water Quality Act also authorizes the Parks and Wildlife Department to file suit against illegal discharges when aquatic life or wildlife is affected (T.C.A. §21.259). The Parks and Wildlife Department also conducts research on pollution problems and advises the Water Quality Board on the ecological effects of particular discharges (Carssow, 1970).

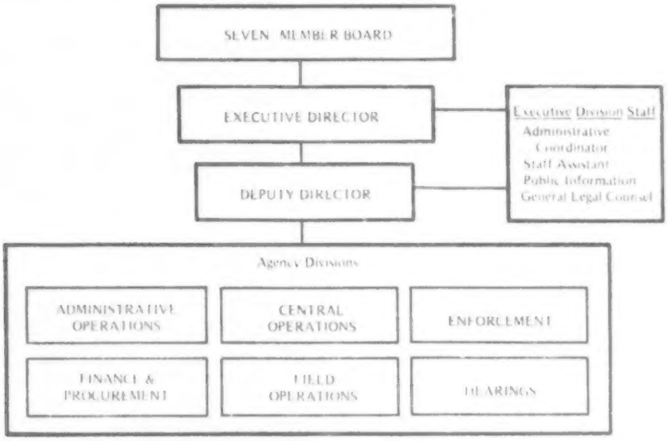


Figure 1. The Texas Water Quality Board

The Texas Water Rights Commission is composed of three full-time Commissioners, appointed by the Governor. The Commission has a supporting staff. See Figure 2 for the Commission's organization shown in relation to other State agencies having major water management, conservation and development responsibilities. The Commission's duties center on its role as the trustee of the public waters of Texas, defined in Section 5.021, Texas Water Code. The Commission is the regulatory agency responsible for the administration of surface water rights.

Texas has both the riparian and appropriation doctrines in effect for surface water quantity allocation and use. However, for all practical purposes, all surface water rights are now required to be filed, approved and administered by the Texas Water Rights Commission.

The Water Rights Adjudication Act enacted in 1967 provided a new procedure for determining the validity and extent of all claims to public water, except domestic and livestock uses which are exempt. Under the Act, the Commission is directed to investigate all claims of water rights and to determine their validity and extent through a series of hearings in each county where evidence will be received inadversary proceedings. Prior to enactment of the Act, adjudication of water rights was accomplished through the district courts of Texas. This was found to be unsatisfactory, too expensive and too time consuming. Under the Water Rights Adjudication Act, the Commission became in effect a state-wide water regulatory agency performing quasi-judicial functions. After completion of a stream adjudication the Commission is directed to establish water divisions in the State under supervision of watermasters. Through these watermasters, the Commission has a continuing duty to guarantee to each water user adjudicated to have a right that the water to which he is lawfully entitled will be available to him in accordance with his right and priority. (Sections 5.031 through 5.341, Texas Water Code.)

To carry out its statutory responsibilities, the Commission has specific programs to ensure the most beneficial uses of water and protect vested superior rights; to determine administratively, with judicial review, the legal basis and extent of surface water rights; to maintain a current inventory of dams and ensure that the dams are designed, constructed and maintained safely; to create, supervise, or dissolve various types of water districts for water control, improvement, conservation, and management; and to participate in governmental interagency joint planning and coordination for natural resources development, conservation and management. (See: The Thirty-Second Report of the Texas Water Rights Commission Covering the Biennium September 1, 1974 thru August 31, 1976 (1976), and Rules (1976, Second Printing).)

In appropriating State water, the Commission shall give preference to the following uses in the order listed (see Section 5.024 and 5.122, Texas Water Code):

1. domestic and municipal uses, including water for sustaining human life and the life of domestic animals;
2. industrial uses, being processes designed to convert materials of a lower order of value into forms having greater usability and commercial value, including the development of power by means other than hydroelectric;
3. irrigation;
4. mining and recovery of minerals;
5. hydroelectric power;
6. navigation;
7. recreation and pleasure; and
8. other beneficial uses.

The Water Development Board carries the responsibility for long-range planning in the development and use of Texas water resources and must take cognizance of the necessity for improved water quality (T.C.A. §21.265). This Board also fulfills an advisory capacity to the Water Quality Board on matters which relate to the quality of ground water in the State.

14.3 SPECIAL LEGISLATION

The Solid Waste Disposal Act was enacted in 1969 to meet the state's need for coordinating and regulating solid waste activities. Amendments were added in 1971 to conform with the County Solid Waste Control Act. The policy of the Act is to safeguard the health, welfare and physical property of the people through controlling the collection, handling, storage and disposal of solid waste (Art. 4477-7 Vernon's Texas Civil Statutes sec. 1).

In the event of any unauthorized disposal of industrial solid waste, the Board will seek recourse against the owner and operator of the disposal facility (Id. § 1.03). The Act prohibits the disposal of industrial solid wastes in such a manner so as to cause:

1. The discharge or imminent threat of discharge of waste into or adjacent to the ground or surface waters of the state, unless they possess a valid permit from the Water Quality Board.
2. The creation or maintenance of a nuisance.
3. The endangerment of the public health and welfare; and/or
4. The disposal of industrial solid waste in an unauthorized site by either the generator or carrier (Id. § 1.04).

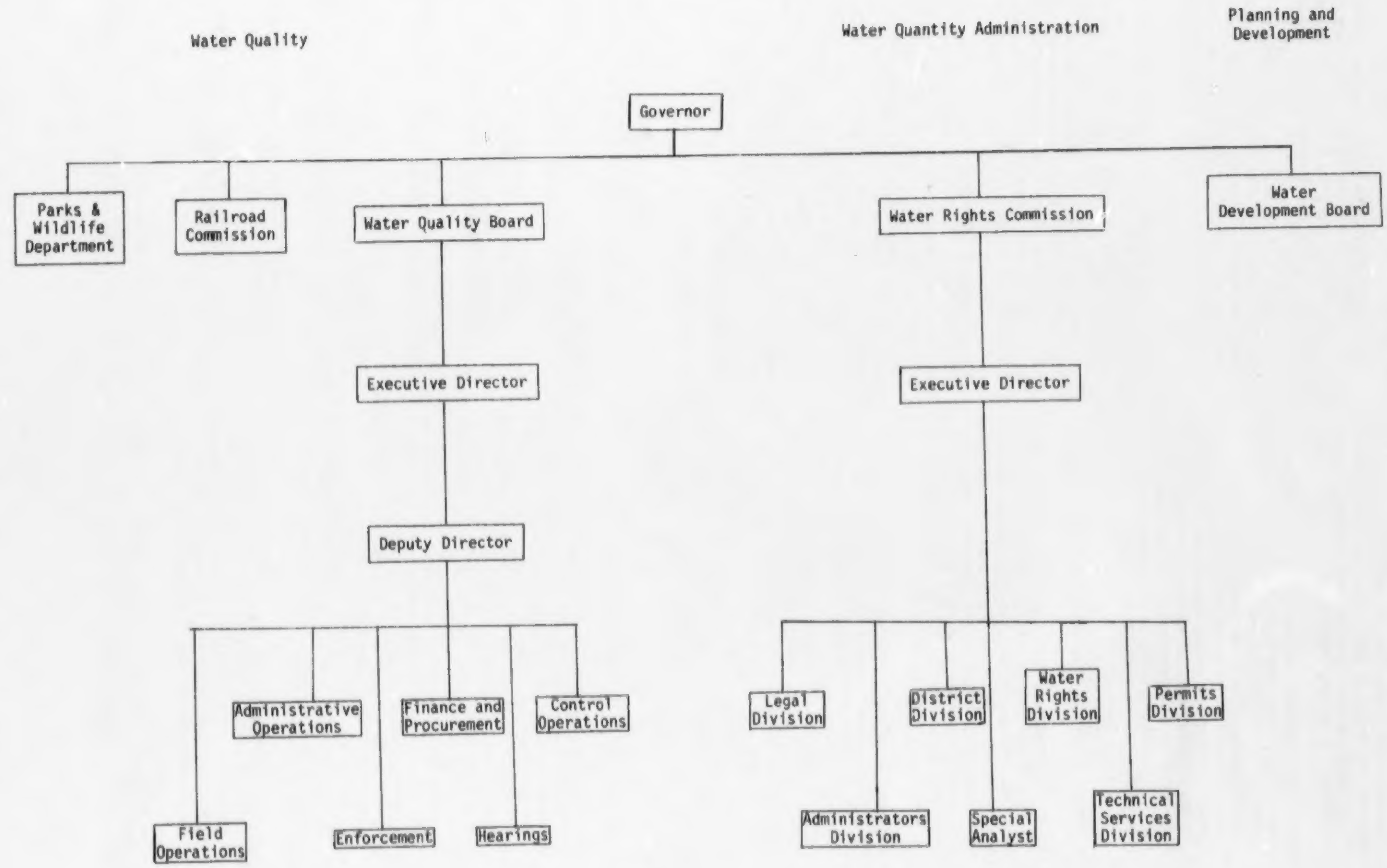
The Solid Waste Disposal Act is administered by the Water Quality Board and the Texas State Department of Health. The Board is designated as the state's solid waste agency with respect to the collection, handling, storage and disposal of industrial solid waste, while the Department of Health is designated as the state's solid waste agency with respect to the collection, handling, storage and disposal of municipal solid waste.

The Injection Well Act is administered by the Water Quality Board and the Texas Railroad Commission. The Board regulates the disposal by injection well of industrial and municipal waste, other than salt water, or other waste arising from the drilling for or production of oil and gas. The Railroad Commission regulates the disposal by injection well of salt water or other waste arising out of, or incidental to, the drilling for or the producing of oil or gas.

14.4 RELATED LEGISLATION

Texas has no Land Use Act. The General Land Office is authorized to adopt and enforce rules and regulations to prevent the pollution of water from the development of oil, gas and other natural resources from, and the use for, industrial purposes of the University and other lands, Gulf lands, public free school lands, and all other lands and waters within the public domain (Rules of the Texas Water Quality Board, Rule 205.5, 1970).

Figure 2. Texas Water Agencies and Major Functions



The Geothermal Resources Act of 1975 gives the Railroad Commission the power to regulate the exploration, development, and production of geothermal energy and associated resources on public and private land in order to conserve that resource and protect correlative rights (T.C.A. Art. 5421 s (4)).

This Act commands that consideration be given:

> to protection of the environment, to protection of correlative rights and to conservation of natural resources by all agencies and officials of the State of Texas involved in directing and prescribing rules, regulations, or orders governing the exploration, development and production of geothermal energy and associated resources and by-products in Texas (T.C.A. Art. 5421 s (3)).

14.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

No discharge of agricultural "waste" is allowed unless it has been authorized by a waste control order, a registration entered in the official records of the Texas Water Quality Board, a regulation or other order of the Board, or an order of the Executive Director as authorized by the Board (Rules of Practice and Procedure, Texas Water Quality Board, January 1976, § 130.01.130.005, 130.01.11.001(b)).

Agricultural waste is defined in the Texas Water Quality Act as "Waterbourne liquid, gaseous, or solid substances that arise from agricultural industry and agricultural activities . . . " (T.C.A. § 21.003 (8)). Tailwater or runoff water from irrigation is specifically excluded from this definition. However, in defining "other waste," the Texas Water Quality Act includes tailwater or runoff water from irrigation (T.C.A. § 21.003(10)). Thus, while the Texas Water Quality Board has the statutory authority to regulate the quality of irrigation return flows, they have chosen not to do so. Furthermore, specific regulations dealing with irrigation return flows have not been enacted.

14.6 CASE LAW APPLICABLE TO AGRICULTURE

In Turner v. Big Lake Oil Co. (128 Tex. 155, 96 S.W. 2d 221, 1936), the Supreme Court of Texas held that one can only recover for damages from the pollution of a natural waterhole on private land by alleging and proving a specific act of negligence by the defendants, or by alleging and proving that the water which was polluted was public waters, the pollution of which was specifically prohibited by statute (T.C.A. §7467, 7469). The defendant had constructed large artificial earthen ponds into which they held polluted waters from their wells. Waters escaped from these ponds and ran over the plaintiff's land, injuring the grass and finally into the plaintiff's livestock watering ponds. The plaintiff based his action on negligence, but the jury acquitted the defendants of any negligence. The Court of Appeals upheld the lower court's judgment and the Supreme Court affirmed.[5]

In Magnolia Petroleum Co. v. State (218 S.W. 2d 855, Texas, 1949), the Court of Appeals of Texas held that the granting of an injunction to enjoin the defendants from discharging salt water into rivers was proper. There are no equities on behalf of anyone who is polluting public waters which are used for domestic purposes.[6]

American Cyanamid Company v. Sparto (267 F. 2d 425, 5th Cir., 1959) was an action by farmers who used waters of stream for irrigation purposes against an upstream chemical company for damages to land and crops allegedly caused by the company's discharge of soluble salts into the stream. The lower court entered a judgment for the farmers and the defendants appealed. The Court of Appeals held that the company had a duty to warn the farmers that their discharge created a risk of injury and the failure to do so constituted negligence.

Humble Pipe Line Co. v. Anderson (339 S.W. 2d 259, Texas, 1960) involved a suit for injuries to land alleged to have resulted from the pollution of well water by crude oil. The lower court rendered judgment for the plaintiffs. On appeal, the Court of Appeals reversed. It held that the maintenance and operation of a pipe line is not a nuisance per se and the trial court was in error in rendering a judgment against the defendant in the absence of a finding of negligence.

Atlas Chemical Industries, Inc. v. Anderson (514 S.W. 2d 309, Texas, 1974) involved a suit by a landowner against a carbon processing plant to recover damages alleged to have been caused to his land by the defendant's discharge of industrial waste into a creek which crossed the plaintiff's land. The lower court rendered judgment for the plaintiff and the defendant appealed. The Court of Civil Appeals held that in cases of intentional continuing pollution, each day's act of pollution is a new, separate and independent offense or injury; the fact that the defendant had been granted a permit did not constitute a defense in an action for pollution damages and the correct measure of damages was the diminution of fair market value or cost of restoration, whichever was less.

INFORMATION SOURCES

______, "Board Adopts Statement on Water Resources Development Policy," Water for Texas, Vol. 6, No. 4, April 1976, Texas Water Development Board publication.

Carssow, Tim, et al., "Water Pollution Control in Texas," 48 Texas Law Review 1029, 1970.

Gambell, Ernest L., "Agricultural Legislation's Potential in Reducing Discharge of Pollutants," Amer. Water Res. Assn, Water Resources Bulletin, Vol. 12, No. 6, December 1976, pp. 1171-1179.

Milstead, Richard C., "Administrative Techniques in Preventing Waste of Stream Water," 29 Texas Law Review 939, 1951.

Pisano, Mark A. "Nonpoint Sources of Pollution: A Federal Perspective," Amer. Soc. of Civil Engineers, Journal of the Environmental Engineering Division, Vol. 102, No. EE3, June 1976, pp. 555-565.

Taylor, Boyd D., "Control of Stream Pollution," 33 Texas Law Review 370, 1955.

______, The Texas Water Plan. Texas Water Development Board, Austin, Texas, Nov. 1968.

---

[5] See also Nash and Windfohr v. Edens, 109 S.W. 2d 496, Texas, 1937; Barakis v. American Cyanamid Co., 161 F.Supp. 25, 1958; Gillum v. Rogers, 430 S.W. 2d 822, Texas, 1968.

[6] See also Continental Oil Co. v. City of Groesbeck 95 S.W. 2d 715, Tdxas, 1936.

______, A Report to the Governor and to the 62nd Legislature, by Texas Water Resources Study Committee, House Chamber (includes a report on water quality), Austin, Texas, 1970.

______, The 31st Report of the Texas Water Rights Commission (covering the Biennium Sept. 1, 1972 thru Aug. 31, 1974), Texas Water Rights Commission, Joe D. Carter, Chairman, Austin, Texas, 1974.

______, The 32nd Report of the Texas Water Rights Commission (covering the Biennium Sept. 1, 1974 thru Aug. 31, 1976), Texas Water Rights Commission, Joe D. Carter, Chairman, Austin, Texas, 1976.

______, Rules, 2nd Printing, Texas Water Rights Commission, Austin, Texas, 1976.

______, Texas Water Quality Standards (to be considered at Public Hearing in Austin), Texas Water Quality Board, Austin, Texas, Oct. 1975; plus, Addendum to Proposed Revision, Oct. 15, 1975.

______, Water for Texas (monthly publication), Texas Water Department Board, Austin, Texas.

______, Rules of Practice and Procedure, Texas Water Quality Board, Austin, Texas, Jan. 1976.

______, Texas Water Quality Act, Agency Pub. 72-02, Texas Water Quality Board, Austin, Texas, revised July 1976.

______, The State of Texas: Continuing Planning Process (§208 and 303c Report), Texas Water Quality Board, Austin, Texas, Feb. 1976.

______, Rice Irrigation Return Flow Study (Brookshire and Garwood Projects, Texas, Interim Report 1969-73), Texas Water Development Board, Austin, Texas, Aug. 1974).

APPENDIX A

15. UTAH

15.1 SUMMARY OF WATER QUALITY LAWS

15.1.1 Background

The first comprehensive legislative program for the control of water quality was enacted in 1953 (Utah Session Laws, Ch. 41, 1953). This enactment provided for the establishment of the State Water Pollution Control Board as the administrative agency responsible for enforcement of the act (Ibid, §4). Substantial amendments were made to this legislation in 1967 and the result was the basic structure for the present Utah Water Pollution Control Act (U.C.A.§§73-14-1 to 73-14-13). The authority which had been originally vested in the Water Pollution Control Board was delegated to the State Committee on Water Pollution. This change in authority was completed in 1969 when amendments substituted "committee" for "board" where it appeared in the act (Utah Session Laws, Ch. 197, 1969). Additional amendments were made in 1973 to allow the State of Utah to "meet the requirements of federal law related and pertaining to water pollution" (UCA §73-14-4 (m).

15.1.2 Policy

The water pollution policy of Utah expressly recognizes that water quality degradation is a menace to public health, creates public nuisances, is harmful to fish and wildlife and other beneficial uses, and is contrary to the state's policy for conservation of water resources. It is the policy of Utah to protect, maintain and improve the quality of the State's waters and to require proper treatment to be given to discharged wastes (U.C.A. §73-14-1). The Utah Water Pollution Control Act also provides that it is a public nuisance "to place or cause to be placed any wastes in a location where they will cause pollution to any waters of the state" (U.C.A. §73-14-5).

To carry out the legislative mandates, the Utah State Division of Health adopted an anti-degradation policy calling for the maintenance of the quality of water where it is higher than required by quality standards (Utah Code of Waste Disposal Regulations, hereafter cited as U.C.W.D.R., Part II-3, 1968). This higher quality will be protected unless a change is economically or socially justified and present or anticipated uses of the water will not be precluded.

15.1.3 Classification

The State of Utah has developed an extensive system for the classification of state waters. The authority for this process is contained in the Water Pollution Control Act. The Water Pollution Committee is empowered to "group the waters of the state into classes according to their present most reasonable uses" (U.C.A. §73-14-6). When it is found to be in the public interest, and subject to legislative approval, the Committee may upgrade the classification of state waters.

The Act provides for public input in the classification of waters and requires the Committee to allow a reasonable time for persons who are discharging wastes to comply with state classifications and standards (U.C.A. §73-14-6)

Briefly, the classification that has been adopted is as follows:

> Class "A" Waters are protected against pollution so as to be suitable at all times for beneficial use without treatment;
>
> Class "B" Waters are protected against pollution to such an extent that only disinfection is required prior to use;
>
> Class "C" Waters are protected against pollution to the extent that treatment by coagulation, sedimentation, filtration, and disinfection is required prior to use;
>
> Class "CC" Waters are protected against specific levels for temperature and dissolved oxygen;
>
> Class "CW" Waters are protected against specific temperature increases;
>
> Class "CR" Waters are to be suitable for swimming and other specific uses;
>
> Class "CCR" Waters are protected as Class "CC" and "CR" waters;
>
> Class "CWR" Waters are protected as Class "CW" and "CR" waters;
>
> Class "D" Waters are those waters which are to be suitable at all times for limited irrigation purposes;
>
> Class "E" Waters are those waters which are protected against pollution which may result as a health hazard or nuisance;
>
> Class "S" Waters are protected as Class "A" waters except that the Committee can permit specific waste discharges (U.C.W.D.R., Part II-6 to II-16, 1968).

15.1.4 Standards

In addition to classifying state waters, the Water Pollution Committee is authorized to establish water quality standards for each classification that are "consistent with most reasonable present and future use of such waters" (U.C.A. §73-14-6). Once adopted, the standards can be modified or changed by the Committee.

The standards which have been adopted by the Committee are published in the Utah Code of Waste Disposal Regulations, Part II, Standards of Quality for Waters of the State (1968). The purpose of the standards is to preserve higher water quality upstream from the lowest downstream point identified with a given classification (U.C.W.D.R., Part II-4, 1968).

15.1.5 Permit System

Current Utah law requires that the Committee issue a permit for the disposal of wastes under the following circumstances:

(1) construction and operation of treatment works;
(2) an increase in volume or strength of discharges specified under an existing permit;
(3) construction and operation of any operation which would alter water quality in any manner not already authorized; and
(4) construction or use of any new outlet for discharge (U.C.A. §73-14-5).

The Committee is empowered to issue the permits subject to submission of plans and is given the authority to attach specific conditions to the issuance of the permit.

15.1.6 Sanctions and Enforcement Measures

It is a misdemeanor to violate the provisions of the Utah Water Pollution Control Act and the rules of the Committee which have been promulgated under the act (U.C.A. §73-14-10). Each day the violation continues is treated as a separate offense. In addition to the criminal sanctions, the State Attorney General, on the request of the Committee, can bring an action to enjoin the violation of the act or regulation (Ibid).

Judicial review of any final determination by the Committee is provided by filing a petition in district court (U.C.A. §73-14-11).

15.2 ADMINISTRATION OF WATER QUALITY LAWS

15.2.1 Water Quality Control

Prior to 1967, water pollution control was under the jurisdiction of the State Water Pollution Control Board. In 1967, the Pollution Control Act was amended to create the Committee on Water Pollution within the Division of Health of the Department of Social Services (See Figure 1). Primary jurisdiction for water quality control rests with the Committee.

The Committee's membership includes eight persons (representing various water user interest groups and the public) who are appointed to four-year terms by the Governor (U.C.A. §37-14-3). The Director of the Division of Health is also a member of the Committee (Ibid.) The Committee is given specific duties and powers by statute which include the adoption of regulations and standards for controlling water pollution; enforcement of those rules; issuance and conditioning of discharge permits; research and investigatory powers; issuance of orders on specific matters relating to water quality; dissemination of information; and intergovernmental coordination (U.C.A. §73-14-4). However, the legislature directed that in carrying out the 13 enumerated duties, first priority will be given to prevention or abatement of pollution which results in hazards to public health (Ibid).

The Committee also acts as the hearing board for determinations of whether violations of the act have occurred, and is required to make findings of fact and law regarding the possible violation (U.C.A. §73-14-7). The same process for administrative review is available for those persons who have their permit denied or revoked by the Committee (Ibid).

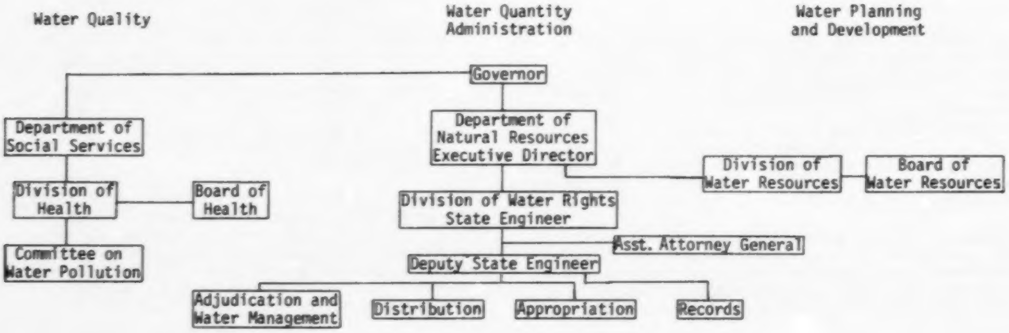
The Committee is given the authority to enter public or private property, at reasonable times, to inspect and investigate conditions affecting water quality (U.C.A. §73-14-9). The Committee has additional authority to inspect the records of disposal systems (Ibid).

15.2.2 Additional Agency Involvement

The Utah Public Health Code grants the Division of Health the authority to regulate "potable water systems" (U.C.A. §26-15-4.5). However, the enabling legislation for this control specifically prohibits the "exercise of administrative control over water used solely for irrigation purposes" (Ibid). The above restriction only applies to those regulations which are promulgated under the provisions of Chapter 15 of Title 26, Utah Code and does not affect the regulatory scheme of the Utah Water Pollution Control Act which is found under Chapter 14 of Title 73.

Under Utah law, the State Engineer in the Division of Water Rights, Department of Natural Resources, is also given the authority to prevent the pollution or contamination of state waters (U.C.A. §73-2-1). He has the power to reject applications for the appropriation of water as not being in the public interest if he

Figure 1. Utah Water Agencies and Their Functions


Water Quality
Water Quantity Administration
Water Planning and Development
Governor
Department of Social Services
Division of Health
Board of Health
Committee on Water Pollution
Department of Natural Resources Executive Director
Division of Water Resources
Board of Water Resources
Division of Water Rights State Engineer
Asst. Attorney General
Deputy State Engineer
Adjudication and Water Management
Distribution
Appropriation
Records

concludes that the proposed use will unreasonably affect the natural stream environment (U.C.A. §73-3-8, 1953).

The recently enacted Wildlife Resources Code makes it unlawful for anyone to pollute waters which are considered by the State Wildlife Board to be necessary propagation of aquatic wildlife and insects (U.C.A. §23-15-6). Each day the pollution exists constitutes a separate offense.

On the local government level, a 1959 amendment to the Utah Constitution enabling legislation for flood control projects specifically grants authority to boards of county commissioners to enforce all laws and regulations against the pollution water (U.C.A. §17-8-5). This legislation apparently provides an alternative, at the local level, to the enforcement mechanism at the state level.

15.3 SPECIAL LEGISLATION

The 1976 Session of the Utah Legislature enacted a measure which allows municipal and county governments to undertake the financing of pollution control equipment for installation in private business operations (U.C.A. §11-17-1.5, 1976 Interim Supp.). The stated purpose in passing this legislation was to promote industrial development within the State of Utah (Ibid).

15.4 RELATED LEGISLATION

15.4.1 Improvement Districts for Water, Sewer or Sewage Systems

Utah statutes provide for the formation of special districts for: (1) the provision of water supply, treatment and distribution; (2) collection, treatment and disposal of sewage; and (3) flood control (U.C.A. §§17-6-1 to 17-6-32). This legislation is more commonly known as "County Sewer and Water Districts" due to the county-wide nature of the districts' operation. These districts can function within municipal as well as unincorporated areas (U.C.A. §17-6-2).

County Sewer and Water Districts are initiated by filing a petition with the board of county commissioners stating the nature of the operations of the proposed district (U.C.A. §17-6-2). The internal affairs of the district are governed by an elected board of trustees (U.C.A. §17-6-3.1). Financing is accomplished by the issuance of either general obligation or revenue bonds which are repayable from taxes and operating revenues (U.C.A. §17-6-3.2). These districts have also been given the power to condemn private property by eminent domain (U.C.A. §17-6-3.8).

15.4.2 Flood Control Projects

The boards of county commissioners can contract with the United States Department of Interior, Bureau of Reclamation, for the construction of flood control projects (U.C.A. §§17-8-1 to 17-8-7). It is, however, interesting to note that the State Engineer is given the authority for the actual operation of the projects (U.C.A. §17-8-3). The area of operation for such projects can include more than one county, and repayment of construction costs is accomplished by a county tax on real property (U.C.A.§§17-8-4 and 17-8-6).

As stated earlier, under this Flood Control Projects Act, the boards of county commissioners are granted concurrent authority with agencies of state government to enforce all state laws and regulations against water pollution (U.C.A. §17-8-5, 1975 Cum. Supp.).

15.4.3 Drainage Districts

The Drainage District Law is intended to provide a governmental structure for the purpose of land reclamation through drainage programs (U.C.A.§§19-1-1 to 19-1-20). Formation of a drainage district is initiated by the filing of a landowner's petition with the local board of county commissioners (U.C.A. §19-1-1). The petitioners must also file an amount equal to 2 percent of the estimated cost of the proposed improvements with the county commissioners (U.C.A. §19-1-2).

Internal operations of these districts are governed by a board of supervisors appointed by the county commissioners (U.C.A. §19-1-7). Costs of district operations are paid for by assessments on benefited property and the districts have the power of eminent domain to take property and water rights by condemnation (U.C.A. §19-1-8).

15.4.4 Soil Conservation Districts

The Soil Conservation District Law was enacted for the purpose of promoting proper land use practices (U.C.A. §§62-1-1 to 62-1-17). The act provides for the creation of a State Soil Conservation Committee which then oversees the operation of local districts (U.C.A. §62-1-4).

Local districts are formed by submission of a land occupiers petition to the state Soil Conservation Committee (U.C.A. §62-1-5). Supervisors for local districts are then elected by land occupiers within the district (U.C.A. §62-1-6).

15.4.5 Irrigation Districts

Utah statutes provide for the formation of irrigation districts on the county level (U.C.A. §§73-7-1 to 73-7-64). Irrigation districts are organized to conserve and prevent the waste of water by placing it to beneficial use (U.C.A. §73-7-1, 1953). Formation of the district is initiated by the filing of a petition with the board of county commissioners (U.C.A. §73-7-2). An election by landowners determines the establishment of the district and the members of the district's board of directors (U.C.A.§§73-7-4 and 73-7-7).

The legislation provides for the State of Utah to cost-share half of the expense with the county (U.C.A. §73-7-2). Local funding is provided by the issuance of assessment bonds (U.C.A. §73-7-16).

15.4.6 Water Conservancy Districts

A fairly recent act provides for the creation of Water Conservancy Districts as a means of increasing the benefits from the use of water (U.C.A. §§73-9-1 to 73-9-42). Among the enumerated purposes for establishing such districts is to:

> Directly benefit lands now under irrigation by stabilizing the flow of water in streams and by *increasing the flow and return flow* of water to such streams (U.C.A. §73-9-1, emphasis added).

The process for formation of a conservancy district is begun by filing a petition with the district court (U.C.A. §73-9-4). Upon court approval of the petition, an order is issued incorporating the district and the appointment of the district's first board of directors (U.C.A.§§73-9-8 and 73-9-9). Directors are then subsequently elected to office (U.C.A. §73-9-11).

Financing is provided by the issuance of bonds following an election (U.C.A. §73-9-22). The bonds are repaid by taxes, assessments and the sale or lease of water to irrigation districts and private persons (U.C.A. §§73-9-15 and 73-9-18 to 73-9-19).

15.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

The Utah Committee on Water Pollution has adopted a five-part series of regulations which comprise the Code of Waste Disposal Regulations of the Utah State Division of Health. The entire set of regulations consists of the following:

- Part I - Definitions and General Requirements;
- Part II - Standards of Quality for Waters of the State;
- Part III - Sewers and Wastewater Treatment Works;
- Part IV - Individual Wastewater Disposal Systems; and
- Part V - Small Underground Wastewater Disposal Systems.

In addition to the above mentioned regulations, the Utah Water Pollution Committee from time to time has issued Orders on stream classification and effluent standards for waste discharges.

A review of these regulations and orders does not reveal the existence of specific application to agriculture in general or the problem of irrigation return flow quality. Likewise, the same regulations and orders do not contain any exemptions from the general application of state regulations to the agricultural use of water. The only specific mention of agriculture is found in the definition of "pollution" as taken from the Act and reproduced in the regulations (U.C.A. §73-14-2). This term expressly recognizes that water pollution includes discharges which are harmful to agriculture but not from agriculture.

15.6 CASE LAW APPLICABLE TO AGRICULTURE

Several rulings by the Utah Supreme Court have recognized the concept that water quality is a component of the right to appropriate a specific quantity of water. In the earliest Utah decision on this point, Mr. Justice Moffat, writing for the court, said:

> water from the source to the point where the appropriator or user captures or diverts it into his conveying channels or containers is publici juris; and others have the same right to use it as the appropriator, so long as they do not interfere with the appropriator's use, by diminishing his quantity or impairing the quality (Wrathall v. Johnson, 86 Utah 50, 40 P.2d 755,776, 1955; emphasis added).

This contention was cited with approval in the subsequent ruling by the Utah Court in Adams v. Partage (95 Utah 1, 72 P.2d 648, 1957). The Adams case turned on the issue of whether a person could acquire a right in a stream for livestock and domestic use without the act of making a diversion. The court found that such action was lawful as long as these actions did not interfere with the right that prior appropriators have in the quantity and quality to satisfy their appropriation (Adams v. Partage, 95 Utah 1, 72 P.2d 648,654, 1937).

In the case of Rocky Ford Irrigation Company v. Kents Lake Reservoir Co. (140 P.2d 638, Utah, 1943), the Utah Supreme Court, in interpreting the section of Utah Code granting certain powers to the State Engineer, noted that among the powers given that Office was the authority to:

> bring suit in courts of competent jurisdiction to enjoin the unlawful appropriation, diversion, and use of both surface and underground water and to prevent waste, loss, or pollution thereof... (Rocky Ford Irr. Co. V. Kents Lake Reservoir Co., 104 Utah 216, 140 P.2d 638,639, 1943; emphasis added).

The only court test found of the Utah Water Pollution Control Act is State Water Pollution Control Board v. Salt Lake City (6 Utah 2d 247, 311 P.2d 370, 1957). In ruling on whether the State Board (now the Committee) had the constitutional authority to regulate municipal waste discharges, the court held that the Board had the power over cities to prohibit pollution, but it does not have the authority to apply rules which would interfere with the internal operation of a municipal sewer system.

15.7 INFORMATION SOURCES

Bliss, Robert L., "Ecology Symposium," 1970 Utah L. Rev. 383, et. seq.

Maack, Robert D., "Environmental Contamination: A Foul and Pestilent Congregation of Vapors," 1970 Utah L. Rev. 1.

Raisch, Jerry W., "Utah Environmental Problems and Legislative Response," 1972 Utah L. Rev. 479, 1973 Utah L. Rev. 1.

______, Planning for Water Quality in the Bear River System in the State of Utah, Utah Water Research Laboratory in Cooperation with the Bureau of Environmental Health, State of Utah, Logan, Utah (March 1974).

______, Planning for Water Quality in the Sevier River System in the State of Utah, Utah Water Research Laboratory in Cooperation with Bureau of Environmental Health, State of Utah, Logan, Utah (March 1974).

______, Planning for Water Quality in the Virgin River System in the State of Utah, Utah Water Research Laboratory in Cooperation with Bureau of Environmental Health, State of Utah, Logan, Utah (March 1974).

Anderson, M. H., "The Efficient Use of Utah's Irrigation Water: Increased Transferability of Water Rights." Utah Law Rev., Spring 1975, pp. 158-78.

______, Water Quality Report (305(b) Report), Bureau of Water Quality, Environmental Health Services Branch, Division of Health, Department of Social Services. State of Utah, Salt Lake City, Utah (April 1975).

Meyer, D. J. Irrigation Return Flows in Utah Valley. Unpublished Masters Thesis, Dept. of Agricultural Engineering, Colo. State Univ., Ft. Collins, Colo. (July 1974).

Haws, F. W. A Study of Water Institutions in Utah and their Influence on Planning, Development and Managing of Water Resources, Report No. PRWG-79-1, Utah Water Research Laboratory, College of Engineering, Utah State Univ., Logan, Utah (Sept. 1973).

APPENDIX A

16. WASHINGTON

16.1 SUMMARY OF WATER QUALITY LAWS

16.1.1 Background

The beginning of a water pollution control program in Washington was initiated by a fact finding program by the Departments of Health and Fish and Game from 1925 to 1935 (Powe, p. 427, 1967). As a result of this program, a Pollution Control Commission was created which consisted of the directors of the Departments of Health, Fish and Game and Conservation.

Pollution control bills were introduced in 1941 and 1943, but both failed to pass. However, in 1945, the legislature enacted the Water Pollution Control Act (R.C.W. §90.48, 1961). This Act created a statutory commission which was made up of the above directors plus the Director of the Department of Agriculture (R.C.W. §90.48.021) and a director appointed by the Governor (R.C.W. §90.48.023).

This Commission was directed to maintain the highest possible standards of water quality consistent with the water uses of the state (R.C.W. §90.48.010). Under this Act, the Commission was given the power to promulgate rules and regulations (R.C.W. §90.48.035), determine the conditions of the waters of the state (R.C.W. §90.48.070), and to issue orders (R.C.W. §90.48.120).

Further sections were added in 1948 in response to federal water pollution control legislation (see 62 Stat. 1155, 1948; R.C.W. §90.48.153, .156, 1961). Finally, in 1955 the legislature enacted a statute which required all industrial operations which discharge any waste materials into the waters of the state to obtain a permit from the Commission (R.C.W. §90.48.160). Permits were conditional upon the maintenance of standards designed to prevent undue pollution of the waters of the state (R.C.W. §90.48.180).

In 1963, procedures were modified to provide that if cooperative attempts failed, a staff member would inform the Director of this fact and a letter would be issued from the Attorney General's office stating that the violation may be a crime and could be subject to abatement (Powe, p. 433, 1967). After the letter was sent, the statutory procedure would then be used if the violator refused to comply (R.C.W. §90.48.120).

The Water Pollution Control Act was strengthened in 1967 by the enactment of two sections. Section 90.48.130 which provided for a stay of Commission orders during a hearing and appeal was repealed. Before this section was repealed, a polluter generally found that a delay while an order was stayed enabled him to challenge a Commission order. The 1967 amendments provided that the Commission could not stay an order unless it determined that a stay would not be detrimental to the public interest (Wash. Sess. Laws, 1967, ch. 13 §12). These changes also meant that a determination by the Commission could be reversed only if the order was unsupported by material and substantial evidence or was arbitrary and capricious (R.C.W., §34.04.130 (6) e, f, 1959). The substantial evidence test was later changed to a test of clearly erroneous in view of the entire record as submitted and the public policy contained in the act of the legislature authorizing the decision or order (Wash. Sess. Laws 1967, ch. 237, §6(6)e). Additional penalties were also enacted which provided that a violation of a waste discharge permit was subject to a penalty of $100 per day (Wash. Laws Ex. Sess. 1967, ch. 139, §14). Finally, amendments were made to the summary abatement section (Wash. Sess. Laws 1967, ch. 13, §22). These changes provided that if it appeared to the Director of the Commission that water quality conditions existed which required immediate action to protect the public health or welfare, he had the authority to issue an order without any prior notice or hearing, which afforded the polluter an alternative of either immediately discontinuing or modifying the discharge or appearing before the Commission.

In 1970, the Department of Ecology was created and all powers of the Water Pollution Control Commission were transferred to this Department (R.C.W. §43.21A.040, .060, in general see §43.21A.010 et. seq.) This Department and its duties will be examined in a subsequent section (see 16.2).

16.1.2 Policy

It is the declared policy of Washington to maintain the:

> highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wildlife, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington. Consistent with this policy, the state of Washington will exercise its powers, as fully and as effectively as possible, to retain the secure high quality for all the waters of the state. The state of Washington in recognition of the federal government's interest in the quality of the navigable waters of the United States, of which certain portions thereof are within the jurisdictional limits of this state, proclaims a public policy of working cooperatively with the federal government in a joint effort to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington (R.C.W. §90.48.010, 1975 Supp.).

The Washington Legislature has also declared:

> ...that it is a fundamental and inalienable right of the people of the state of Washington to live in a healthful and pleasant environment and to benefit from the proper development and use of its natural resources. The legislature

> further recognizes that as the population of our state grows, the need to provide for our increasing industrial, agricultural, residential, social, recreational, economic and other needs will place an increasing responsibility on all segments of our society to plan, coordinate, restore and regulate the utilization of our natural resources in a manner that will protect and conserve our clean air, our pure and abundant waters, and the natural beauty of the state (R.C.W. §43.21A.010).

16.1.3 Classification

The Department of Ecology has classified the waters of Washington as either Lake Class, Class AA, Class A, Class B, or Class C (Washington Administrative Code, Water Quality Standards, effective July 19, 1973, §173-201-030). Under general classifications (W.A.C. §173-201-070), all surface waters lying within the mountainous regions of the state assigned to national parks, national forests, and/or wilderness areas are classified as either Class AA or Lake Class. All lakes and their feeder streams are classified as either Lake Class or Class AA, respectively. All reservoirs with an average detention greater than 15 days are placed under the Lake Class, while all lakes with less than 15 days average detention are classified the same as the river section in which they are located. All reservoirs which have been built on preexisting lakes are classified as Lake Class. Finally, all other waters are designated as Class A.

Water quality in each of the above classifications must meet or exceed the requirements for the uses set forth in the classification (water quality criteria will be discussed in the following section).

Lake Class--
Characteristic uses under this classification include:

1. Water supply (domestic, industrial, agricultural);
2. Wildlife habitat, stock watering;
3. General recreation and aesthetic enjoyment (picnicking, hiking, fishing, swimming, skiing, and boating);
4. Fish and shellfish reproduction, rearing, and harvest (W.A.C. §173-201-030(5)).

Class AA (Extraordinary)--
Characteristic uses under this classification include, but are not limited to the following:

1. Water supply (domestic, industrial, agricultural);
2. Wildlife habitat, stock watering;
3. General recreation and aesthetic enjoyment (picnicking, hiking, fishing, swimming, skiing, and boating);
4. General marine recreation and navigation.
5. Fish and shellfish reproduction, rearing and harvest (W.A.C. §173-201-030(1)).

Class A (Excellent)--
Characteristic uses under this classification include, but are not limited to, the following:

1. Water supply (domestic, industrial, agricultural);
2. Wildlife habitat, stock watering;
3. General recreation and aesthetic enjoyment (picnicking, hiking, fishing, swimming, skiing, and boating);
4. Commerce and navigation.
5. Fish and shellfish reproduction, rearing and harvest (Ibid., §(2)).

Class B (Good)--
Characteristic uses under this classification include, but are not limited to, the following:

1. Industrial and agricultural water supply;
2. Fishing and wildlife habitat;
3. General recreation and aesthetic enjoyment (picnicking, hiking, fishing and boating);
4. Stock watering.
5. Commerce and navigation.
6. Shellfish reproduction and rearing, and crustacea (crabs, shrimp, etc.) harvest (Ibid. §(3)).

Class C (Fair)--
Characteristic uses under this classification include, but are not limited to, the following:

1. Cooling water;
2. Commerce and navigation;
3. Fish passage;
4. Boating (Ibid., §(4)).

16.1.4 Standards

Water quality standards are established for each of the previous classifications (see Appendix B).

At the boundary between waters of different classifications, the water quality criteria for the higher classifications prevails (W.A.C. §173-201-040). With the exception of aesthetic values and acute biological shock conditions, the water quality criteria do not apply:

(a) Within immediate mixing zones of a very limited size adjacent to or surrounding a wastewater discharge;
(b) In the case of total dissolved gas, when the stream flow exceeds the 10-year, 7-day average flood;
(c) In a manner contrary to the applicable conditions of a valid discharge permit (W.A.C. §173-201-040(3)).

16.1.5 Permit System

Before the enactment of the National Pollutant Discharge Elimination System (NPDES) program in 1974, the conduct of a commercial or industrial operation of any type which disposes solid or liquid wastes into the waters of the state meant that the operator had to acquire a permit from either the Department of Ecology or the Thermal Power Plant Site Evaluation Council (R.C.W. §90.48.160). A person discharging domestic sewage into a sewage system was not covered under this statute. This permit system was extended to any county or any municipal or public corporation operating a sewage system (R.C.W. §90.48.162). Furthermore, any city, town or municipal corporation operating a sewage system was given the authority to issue permits for the discharge of wastes into their system, if the Department had ascertained that the sewage system and programs conducted by the city, town, or municipal corporation would protect the public interest (R.C.W. §90.48.165). These permits could be revoked by the Department if the system was not conducted in a manner which would protect the public interest.

Applications for permits had to contain the name and address of the applicant, a description of his operations, the quantity and type of disposal, and any other relevant information (R.C.W. §90.48.170).

Applications had to be made at least 60 days before the commencement of any proposed discharge and the applicant had to publish notice in a newspaper of general circulation within the county at least two times.

The Department would issue a permit unless it found that the disposal of waste material would pollute the waters of the state in violation of public policy (R.C.W. §90.48.180). The Department could specify conditions in a permit and had the power to issue a temporary or a permanent permit. A permanent permit was only valid for five years from the date it was issued (R.C.W. §90.48.180).

A permit could be terminated upon 30 days notice in writing if the Department had made a finding that:

1. it was procurred by misrepresentation of any material fact or by a lack of full disclosure in the application;
2. there had been a violation of the conditions of the permit; or
3. a material change in quantity or type of waste disposal existed (R.C.W. §90.48.190).

If the Department failed to act upon an application within 60 days after it had been filed, the applicant was deemed to have received a temporary permit (R.C.W. §90.48.200).

In 1974, the Department adopted regulations entitled "NPDES Permit System," which was approved by the Environmental Protection Agency in 1974. The state water discharge permit system discussed previously was largely superseded by this permit program. Washington adopted this permit system in order to comply with Federal requirements for discharge permits under the Federal Water Pollution Control Act.

Under Washington's NPDES program, no discharge of pollutants is permitted without an authorized permit (W.A.C.§173-220-020). Any person presently discharging pollutants must file an application with the Department at least 180 days before the date of the desired discharge. Public notice of every application must be circulated by:

(i) Posting in the post office and public places of the municipality nearest the premises of the applicant in which the effluent source is located;
(ii) Posting near the entrance of the applicant's premises and in nearby places; and
(iii) Publishing by the applicant, at his own cost, through a notice form provided by the department in local newspapers and periodicals or, if appropriate, in a daily newspaper of general circulation (W.A.C. §173-220-050).

No permit issued by the Department can authorize a person to:

(1) Discharge any radiological, chemical or biological warfare agent or high-level radioactive waste into navigable waters;
(2) Discharge any pollutants which the Secretary of the Army acting through the Chief, Corps of Engineers, finds would substantially impair anchorage and navigation;
(3) Discharge any pollutant to which the Regional Administrator, not having waived his right to object pursuant to section 402(c) of the FWPCA, has objected in writing pursuant to section 402(d) of the FWPCA:
(4) Discharge from a point source any pollutant which is in conflict with the plan or amendment thereto approved pursuant to section 208(b) of the FWPCA (Id W.A.C.§173-220-120).

Permits issued by the Department must meet or comply with all the following:

(a) Effluent limitations under sections 301 and 302 of the FWPCA;
(b) Standards of performance for new sources under section 306 of the FWPCA;
(c) Effluent standards, effluent prohibitions and pretreatment standards under section 307 of the FWPCA;
(d) Any more stringent limitation, including those:
  (i) Necessary to meet water quality standards, treatment standards or schedules of compliance established pursuant to any state law or regulation under authority preserved to the state by section 510 of the FWPCA; or
  (ii) Necessary to meet any federal law or regulation other than the FWPCA or regulations thereunder; or
  (iii) Required to implement any applicable water quality standards; such limitations to include any legally applicable requirements necessary to implement total maximum daily loads established pursuant to section 303(d) and incorporated in the continuing planning process approved under section 303(c) of the FWPCA and any regulations and guidelines issued pursuant thereto;
  (iv) Necessary to provide all known, available and reasonable methods of treatment;
(e) Any more stringent legal applicable requirements necessary to comply with a plan approved pursuant to section 208(b) of the FWPCA; and
(f) Prior to promulgation by the administrator of applicable effluent standards and limitations pursuant to sections 301, 302, 306, and 307 of the FWPCA, such conditions as the department determines are necessary to carry out the provisions of the FWPCA (Id. W.A.C.§173-220-120).

The permit may be modified, suspended or revoked in whole or in part for any of the following:

(i) violation of any term or condition of the permit;
(ii) obtaining a permit or misrepresentation or failure to disclose fully all relevant facts; and
(iii) either a temporary or permanent reduction or elimination of the permitted discharge (W.A.C. §173-220-150).

16.1.6 Sanctions and Enforcement Measures

Enforcement powers are given to the Department to insure that the provisions of chapter 90.48 R.C.W., the standards for water quality, the terms of waste disposal permits, and other orders and directives of the Department are fully complied with (W.A.C. §173-201-120). The Department is given the following enforcement tools:

1. Issuance of regulating notifications, orders and directives (R.C.W. §90.48-037);
2. Initiation of actions requesting injunctive or other appropriate relief in the various state courts (R.C.W. §90.48.037);
3. Levying of civil penalties (R.C.W. §90.48.144);
4. Initiation of criminal proceedings by the appropriate county prosecutor (R.C.W. §90.48.140); and

5. Issuance of regulating orders or directives (R.C.W. §90.48.240).

Section 90.48.080 makes it unlawful to discharge any organic or inorganic matter which would cause or tend to cause pollution into the waters of the state. The Department, with the assistance of the Attorney General, is authorized to bring any appropriate action at law or in equity in the name of the people of the state of Washington (R.C.W. §90.48.037). Further, the Department has the authority to issue, process and subpoena witnesses throughout the state; compel attendance; administer oaths and require the production of any books or papers relating to the matter under consideration (R.C.W. §90.48.095).

Any person found guilty or willfully violating any of the provisions of chapter 90.48 of the Revised Code of Washington, or any final written orders or directives of the Department or a court, is deemed guilty of a crime and upon conviction is subject to a fine or not more than one year in jail, or both (R.C.W. §90.48.140). Each day of a violation may be deemed a separate and additional violation.

Any violation which causes the death of, or injury to, fish, animals, vegetation, or other resources of the state, or otherwise causes a reduction in the quality of the state's waters below the Department standards, is liable in damages to an amount equal to the sum of money necessary to restock such waters, replenish such resources, or otherwise restore the stream or lake (R.C.W. §90.48.142).

Every person who:

1. Violates the terms or conditions of a waste discharge permit issued pursuant to R.C.W. 90.48.180 or this amendatory act, or
2. Conducts a commercial or industrial operation or other point source discharge operation without a waste discharge permit as required by R.C.W. 90.48.160; or
3. Violates the provisions of R.C.W. 90.48.080, shall incur, in addition to any other penalty as provided by law, a penalty of up to five thousand dollars a day for every such violation.

Further, each violation constitutes a separate and distinct offense. The penalty is imposed by a notice in writing, either by certified mail with return receipt or by personal service, to the person incurring the same from the Director of the Department or his authorized delegate describing such violation with reasonable particularity (R.C.W. §90.48.144).

Section 90.48.336 provides for strict liability for any person who owns oil or has control over it and the oil enters into state waters. Furthermore, any person who intentionally or negligently discharges oil is subject to a penalty in an amount of up to $20,000 for each violation (R.C.W. §90.48.350).

16.2 ADMINISTRATION OF WATER QUALITY LAWS

Water pollution control in Washington is the responsibility of the Department of Ecology and the Ecological Commission. The Department of Ecology was created in 1970 and was given all the powers, duties and functions of the Water Pollution Control Commission (R.C.W. §43.21A.040, .060). Furthermore, the Department of Ecology was also given all the powers, duties and functions of the Department of Water Resources, the State Air Pollution Control Board and the Department of Health with respect to its duties regarding air pollution and the control of pollution problems created by the disposal of solid waste (R.C.W. §43.21A.060).

The Department has the power to promulgate, amend or rescind rules and regulations which are necessary to carry out water pollution statutes (R.C.W. §90.48.035). This power extends to the promulgating of water quality standards in order to maintain the highest possible standards for the waters of the state.

The Department has the authority to bring legal action to enforce Washington's Water Pollution statutes (R.C.W. §90.48.080) and has jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, watercourses and other surface and underground waters of the state of Washington (R.C.W. §90.48.030).

The Ecological Commission, also created in 1970, consists of seven members who are appointed by the Governor from the electors of the state who possess a general knowledge of, and an interest in, environmental matters (R.C.W. §43.21A.170). One public member must be a member of organized labor, one from the agricultural community, one from the business community, and four members from the public-at-large.

The Commission must provide advice and guidance to the Director on each of the following:

1. Any positions proposed to be taken by the Department on behalf of the state before interstate and federal agencies or federal legislative bodies on matters relating to or affecting the quality of the environment of the state;
2. Any comprehensive environmental quality plan, program or policy proposed for adoption by the Department as a state plan or policy pertaining to an environmental management activity;
3. Any procedures for the financial assistance grants proposed to be given to municipal, regional, county or state organizations for environmental quality purposes;
4. Any procedures for considering applications for and granting variances;
5. Any proposal developed for submission to the legislature as a Department request bill; and
6. Any other matter pertaining to the activities of the Department submitted by the Director for which advice and guidance is requested (R.C.W. §43.21A.190).

In addition to its water quality control functions, the Department of Ecology is responsible for the general administrative supervision of Washington's water resources. In other words, both water quality and water quantity functions rest in the Department. See Figure 1 for the organization of the Department related to water matters.

16.3 SPECIAL LEGISLATION

The Protection from Water Pollution Act was enacted in 1965 and was based on laws of 1899, ch. 7, section 2, p. 115 (R.C.W. §35.88.010, _et_. _seq_.). This act was passed to protect the water which is furnished to the inhabitants of cities and towns from pollution and to preserve and protect the purity of the water supply (R.C.W. §35.88.010).

The Act provides that:

> The establishment or maintenance of any slaughter pens, stock feeding yards, hogpens, or the deposit or maintenance of any uncleanly or unwholesome substance, or the conduct of any business or occupation, or the allowing of any condition upon or sufficiently near the (1) sources from which the supply of water for the inhabitants of any city or town is obtained, or (2) where its water is stored, or (3) the property or means through which the same may be conveyed or conducted so that such water would be polluted or the purity of such water or any part thereof destroyed or endangered, is prohibited and declared to be unlawful, and is declared to constitute a nuisance, and may be abated as other nuisances are abated (R.C.W. §35.88.030).

Furthermore, any person violating the above statute is deemed to be guilty of creating and maintaining a nuisance and upon conviction is subject to a fine of $500 (R.C.W. §35.88.040). A nuisance can be abated by the acquisition of an injunction (R.C.W. §35.88.070).

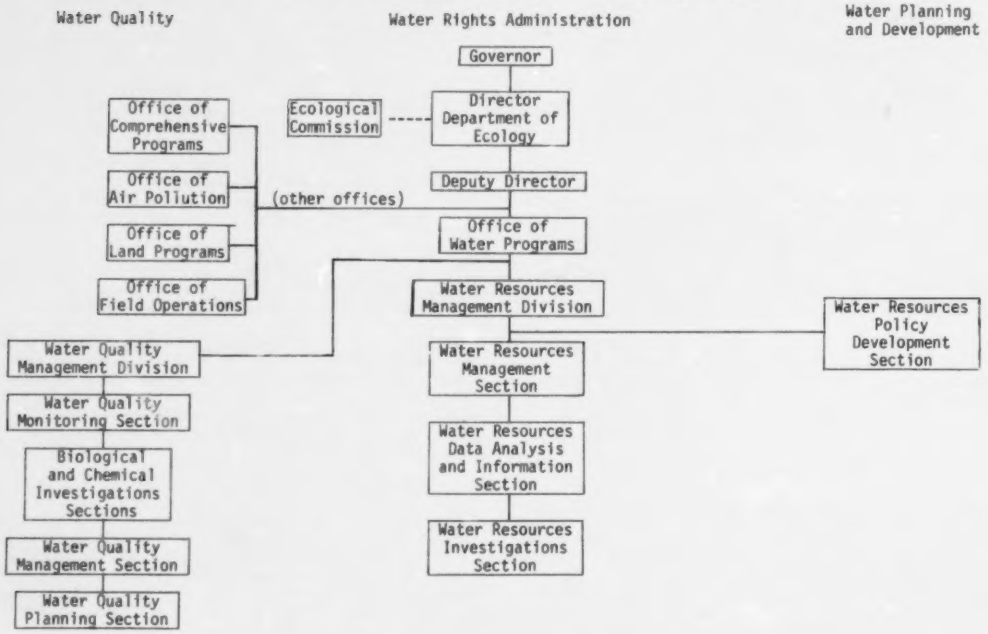
The Act further provides that:

> Any city not located on tidewater, having a population of one hundred thousand or more, is hereby prohibited from discharging, draining or depositing, or causing to be discharged, drained or deposited, any sewage, garbage, feculent matter, offal, refuse, filth, or any animal, mineral, or vegetable matter or substance, offensive, injurious or dangerous to health, into any springs, streams, rivers, lakes, tributaries thereof, wells, or into any subterranean or other waters used or intended to be used for human or animal consumption or for domestic purposes. Anything done, maintenance or suffered, in violation of any of the provisions of this section, shall be deemed to be a public nuisance, and may be summarily abated as such by any court of competent jurisdiction at the suit of the Director of Health or any person whose supply of water for human or animal consumption or for domestic purposes is or may be affected (R.C.W. §35.88.060).

The Environmental Coordination Procedures Act (R.C.W. §90.62.010, *et*. *seq*.) was enacted in 1973 to:

> (a) Provide for an optional procedure to assist those who, in the course of satisfying the requirements of state government prior to undertaking a project which contemplates the use of the state's air, land, or water resources, must obtain a number of permits, from the Department of Ecology and one or more state or local agencies by establishing a mechanism in state government which will coordinate administrative decision-making procedures, and related quasi-judicial and judicial review, pertaining to such documents;

Figure 1. Washington Water Agency and Major Functions


Water Quality
Water Rights Administration
Water Planning and Development
Governor
Director Department of Ecology
Ecological Commission
Deputy Director
Office of Comprehensive Programs
Office of Air Pollution
(other offices)
Office of Land Programs
Office of Field Operations
Office of Water Programs
Water Resources Management Division
Water Resources Policy Development Section
Water Quality Management Division
Water Resources Management Section
Water Quality Monitoring Section
Biological and Chemical Investigations Sections
Water Resources Data Analysis and Information Section
Water Quality Management Section
Water Resources Investigations Section
Water Quality Planning Section

> (b) Provide to members of the public a better and easier opportunity to present their views comprehensively on proposed uses of natural resource and related environmental matters prior to the making of decisions on such uses by state or local agencies;
> (c) Provide to members of the public who desire to carry out the aforementioned projects within the state of Washington a greater degree of certainty in terms of permit requirements of state and local government;
> (d) Provide better coordination and understanding between state and local agencies in the administration of the various programs relating to air, water and land resources; and
> (e) Establish the opportunity for members of the public to obtain information pertaining to requirements of federal and state law which must be satisfied prior to undertaking a project in the state (R.C.W. §90.62.010).

Any person proposing a project can submit a master application to the Department of Ecology and request the issuance of all necessary permits (R.C.W. §90.62.040).[1] The Department will then notify each interested agency for their response. Finally, the Department upon affirmation by the affected agency will issue the various required permits to the applicant.

16.4 RELATED LEGISLATION

Washington created a State Land Planning Commission which was subsequently dissolved on May 15, 1973 (R.C.W. §43.120.010 *et. seq.*).

The Solid Waste Recovery and Recycling Act was enacted in 1976 to establish a comprehensive state-wide program for solid waste handling and solid waste recovery and/or recycling which will prevent land, air and water pollution and conserve the natural, economic and energy resources of the state (Sec. 2, chap. 41, 1975-1976 Second Extra Session).

The legislature created this act because traditional methods of disposing of solid wastes were no longer adequate to meet the state's ever-increasing problems (*Id*, §(1)). The legislature found that improper methods and practices of handling and disposing of solid wastes polluted the land, air and water resources and damaged the overall quality of the environment.

The Solid Waste Advisory Committee (*Id*, §3) must review standards for solid waste handling relating, but not limited, to the following:

> (1) Vector production and sustenance;
> (2) Air pollution (coordinated with regulations of the Department of Ecology);
> (3) Pollution of surface and ground waters (coordinated with the regulations of the Department of Ecology);
> (4) Hazards to service or disposal workers or to the public;
> (5) Prevention of littering;
> (6) Adequacy and adaptability of disposal sites to population served;
> (7) Design and operation of disposal sites; and
> (8) Recovery and/or recycling of solid waste (Id, §(4)).

The Department of Ecology is directed to work closely sith the Departments of Commerce and Economic Development, General Administration and with other state departments and agencies, the Washington State Association of Counties, the Association of Washington Cities and Business Association in order to carry out the objectives of this act.

16.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

Washington's regulations entitled "NPDES Permit Program" provide that:

> No pollutants or other wastes or substances shall be discharged directly to any navigable water of the state from a point source, except as authorized by a permit... (W.A.C. §173-220-020).

Point source is defined by these regulations as:

> any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged (W.A.C. §173-220-030(6)).

Pollutant is defined as:

> dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and agricultural waste discharged into water. This term does not mean sewage from vessels within the meaning of section 312 of the FWPCA (W.A.C. §173-220-030(7)).

Finally, the definition of "discharge of pollutants" is set forth in these regulations as:

> (a) any addition of any pollutant to navigable waters from any point source, (b) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft (W.A.C. §173-220-030 (12)).

The Ecological Commission must adopt water pollution control and abatement plans for sewage drainage basins (*Washington Water Pollution Control Planning Regulations*, W.A.C. chap. 372-68; see *Environment Reporter, State Water Laws*, Vol. 2, §941:0701 *et. seq.*).

The water pollution control and abatement plan must include a basis for planning which takes into consideration the:

> (i) Topography--general description;
> (ii) Soil and drainage characteristics--adequate interpretation of soil types and surface grades to determine suitability for septic tank filter fields;
> (iii) Hydrology--a brief summary of stream discharge records to include maximum, mean and minimum annual flows and 7-day, 10-year low-flow; areas where low-flow establishment is needed; where applicable, a brief summary of information pertaining to the water table and flood plains (100 year floods);
> (iv) Water quality--a brief summary of available water quality data; classification

---

[1] DOE issues only those permits under its specific jurisdiction and authority. Other permits are issued by the responsible agencies.

by interstate and intrastate water quality standards;
(v) This section is to include maps of topography, soil and drainage characteristics, flood plains, watercourse classification and water quality problem areas, and location of sampling stations for quantity and quality (W.A.C. §372-68-060).

Further, the plan must include "other water quality considerations--to include discussion and location of other water quality sources including:"

a. Storm runoff;
b. Soil erosion and land development runoff;
c. Agricultural waste water, including irrigation return flow and animal feedlot wastes.
d. Solid waste disposal runoff and seepage water.

16.6 CASE LAW APPLICABLE TO AGRICULTURE

In City of Aberdeen v. Lytle Logging and Mercantile Co. (108 Pac. 945 (1910)), the Supreme Court of Washington held that where a lumber company maintained a bridge across a stream in such a condition as to pollute the water when hauling logs over the bridge and the bridge could be lifted at a trifling expense to obviate the pollution, the lumber company must raise the bridge. It also held that a riparian owner may be restrained from polluting a stream forming a water supply of a city maintaining a pumping station on its banks, where to obviate the pollution it is only necessary to lift a bridge at a trifling expense.

In Parkwood v. Mendota Coal and Lake Co. (146 P. 163 (1915)), the Supreme Court of Washington held that a lower owner is entitled to the water in a stream in substantially the natural flow and without material pollution. The lower owner may recover if the stream is polluted so as to be unfit for ordinary domestic use. In this case, the defendant polluted the waters through his mining operations and rendered it unfit for the plaintiff's domestic use.

In Naches and Cowiche Ditch Co. v. Weikel (151 P. 494 (1915)), the Supreme Court of Washington affirmed a lower court judgment for dismissal. In this case, the plaintiff sought to enjoin the defendants' from allowing water used for irrigation to flow from their lands into Cowiche Creek. The plaintiffs irrigated their lands and permitted waste water to escape into a stream which caused silt to settle in the plaintiffs' canal, but the water was not rendered unfit for irrigation. The lower court dismissed the action because the evidence was insufficient to show injurious pollution and that the drainage of waste waters from the defendants' land did not violate the plaintiffs rights. The Supreme Court states that a prior appropriator of water in a stream is entitled to have the stream continue to flow without pollution rendering the water unfit for the use to which it has been put.

A 1941 case, Snavely v. City of Goldendale (117 P.2d 221 (1941)) involved a plaintiff, who alleged that the city of Goldendale and others polluted the waters of the Little Klickitat River which runs near Goldendale. The plaintiff was riparian to the stream, owned land about a half mile below the city, which was used for dairy farming. The plaintiff further alleged that the pollution consisted of raw sewage dumped into the river which rendered it unfit for domestic use and harmful to health.

Another of the defendants allegedly operated a stock and slaughter yard on the banks of the stream which they caused and permitted the refuse, blood and waste from slaughtered animals and other filth thereby contaminating and polluting the water and rendering it unfit for domestic use.

The lower court dismissed on defendant's demurrer to the complaint that several causes of action had been improperly united. The Supreme Court held that with respect to actions for damages resulting from the pollution of streams, those who contribute to the common injury may be joined as defendants in the same action.

The case of Haveman v. Beulow (217 P.2d 313 (1950)) involved an action by H. J. Haveman against C. F. Beulow to recover damages for the pollution of water in the plaintiff's wells. The Superior Court of Whatcom County awarded each of the plaintiffs a money judgment and enjoined and directed cessation of the acts of the defendants' as a nuisance. The defendants appealed.

The Supreme Court of Washington upheld the findings of the lower court by finding that the evidence was substantially supported, the measure of damages was proper and that the lower court properly granted relief by the injunction and abatement.

Bradley v. Consolidated Silver Mountain Mines Co. (298 Pac. 324 (1931)) found the Supreme Court of Washington upholding a lower court decision for the plaintiff.

The plaintiff owned a dairy ranch located near the defendant's mine. The plaintiff's cattle drank from a small stream which was a short distance from the mine. Tailings from the mill had been permitted to enter this stream. The action was brought by T. E. Bradley against the Consolidated Silver Mountain Mines Co. to recover damages for the plaintiff's cattle which occurred when the cattle drank water which had been polluted by the tailings from the defendant's mine and mill.

Drake v. Smith (337 P.2d 1059 (1959)) was a joint action of five landowners for damages for pollution of a stream from which they used water for domestic purposes by means of a community water system. The defendants were engaged in logging operations and deposited debris in the stream. The lower court entered a judgment against the defendants and they appealed.

The Supreme Court of Washington held that the defendants had no intention of removing the debris from the stream. It sustained the decision that the pollution of the stream was permanent.

Tyler v. Van Aelst (512 Pac. 2d 760 (1973)) was an action brought by the owners of a water diversion system against the defendants for damages for injury to the water diversion system and also for a permanent injunction enjoining defendants from committing future damage to the system. The defendants counter-sued for damages and for an injunction. The Superior Court enjoined the defendants from committing future damage to the water diversion system, but it denied either party any damages. Both parties appealed.

The Court of Appeals held that a water right in a creek was a sufficient legal right to base a permanent injunction to prohibit the defendants from interferring with that right.

16.7 INFORMATION SOURCES

Powe, L. A., Jr., "Water Pollution Control in Washington," 43 Washington Law Review 425, 1967.

_____, Water Quality Assessment Report, Vol.'s 1 & 2, 1975.

_____, Agricultural Return Flow Management in the State of Washington, prepared by CH$_2$M Hill, Consultants for Washington Department of Ecology, April 1975.

_______, Technical Bulletin No. 8, Dept. of Ecology, April 1975.

Van Ness, W. Washington Water Law. Open file Report #2, Water Res. Center, Univ. of Wash., Pullman, Wash. Feb. 1967.

Rosenow, B. A Study of Various Procedures Utilized by Selected Water-Oriented Special Districts Which are Common to All of Them. Completion Report, OWRT Project No. A-030-WASH, Univ. of Wash. School of Law, Seattle, Wash., July 1970.

Van Ness, W. Uncertainty in Washington Water Rights. Draft Report, OWRR Project No. A-002-WASH, Univ. of Wash. School of Law, Seattle, Wash., Feb. 1967.

Whittlesey, N. and J. H. Allison, Jr. The Value of Water Used in Washington Irrigated Agriculture. Bul. #745, Washington Agricultural Experiment Station, Wash. State Univ., Pullman, Wash., Nov. 1971.

Davis, R. D. Some Recommendations for Improving Implementation of Washington State Water Law. Report No. 24, Water Research Center, Wash. State Univ., Pullman, Wash., March 1976.

Davies, R. D. (editor). Proceedings: Conference on Regulating Appropriation of Water in the State of Washington. Rept. No. 24, Supplement, Water Research Center, Washington State Univ., Pullman, Wash., Mar. 1976.

APPENDIX A

17. WYOMING

17.1 SUMMARY OF WATER QUALITY LAWS

17.1.1 *Background*

The first water quality legislation in Wyoming was enacted in 1921 and was directed at protecting those uses, including agriculture, for which water could be appropriated from pollution and contamination due to the activities of manufacturing or industry (W.S.A. § 35-196). This statute made it a misdemeanor, with maximum penalties of $100 fine and up to six months imprisonment, for conviction of polluting a natural stream or lake.

Two years later, in 1923, the Department of Health was given "general oversight and care of all inland waters" (W.S.A.§35-184). The Department's authority extended to control of water pollution which adversely affected uses which included livestock and agricultural crops. The Department of Health was given the authority to develop rules and regulations to "prevent pollution and secure sanitary protection of all such waters as are used for domestic uses" (W.S.A.§35-185). Action could be taken by the Department to enjoin any polluting activity as a public nuisance upon complaint of any municipal officer, or upon its own initiative (W.S.A. § 35-190).

Legislation adopted in 1945 further expanded the scope of public nuisance to include those actions which:

> Directly or indirectly cause or threaten to cause pollution or impairment of the purity or usefulness of the waters of any spring, stream, irrigation ditch, lake or water supply; whether surface or subterranean, which are used wholly or partly as a source of public or domestic water supply (W.S.A. § 35-462).

The penalty for conviction of this offense is a fine of up to $100 or imprisonment for up to ninety days, or both (W.S.A.§35-468).

In 1973, the Environmental Quality Act was adopted as a comprehensive means for administering air, water and land quality provisions (W.S.A.§35-502.1 to 35-502.56, 1975 Cum. Supp.). This legislation is the major effort in Wyoming to deal with water quality concerns. Most state functions in the area of water quality have been consolidated and placed under the administration of the Water Quality Division of the Department of Environmental Quality (W.S.A.§35-502.7(c), 1975 Cum. Supp.). It is important to note that this Act does not limit or interfere with the jurisdiction, duties or authority of the State Engineer and several other officials only remotely concerned with water pollution control (W.S.A. §35-502.56). In 1974, the provision which excluded the Act's application to any irrigation practice was repealed (Wyo. Laws 1974, Ch. 14, §24).

17.1.2 *Policy*

In 1973, the Environmental Quality Act established the policy of Wyoming to protect public health and welfare values, including agriculture, from the adverse affects of pollution to air, water and land resources (W.S.A. §35-502.2, 1975 Cum. Supp.). The specific goal for water quality was adopted by the Department of Environmental Quality. It is stated:

> The goal of the water pollution control program is to maintain the best possible quality of water commensurate with use. All sources of pollution, whether man-made or natural, shall be considered. Control shall be applied to all sources where physically and economically feasible. By the nature of the problems, they will evolve into long-range and short-range programs to reach the ultimate goal. Definition of such problems and control programs will be part of the State Continuing Planning Process (*Wyo. Water Quality Rules and Regs.*, hereafter *W.W.Q.R.R., Ch. I, §3, 1974*).

To implement this policy and goal, the waters of the state have been classified and water quality standards adopted. The assurance that these standards will be met is the incorporation of the discharge permit system initiated by the Federal Water Pollution Control Act amendments of 1972 into the state program.

17.1.3 *Classification*

Wyoming waters have been divided into the three classes:

> *Class I*: Those waters which, based on information supplied by the Wyoming Game and Fish Department, are determined to be presently supporting fish or have the hydrologic and natural water quality potential to support game fish.
>
> *Class II*: Those waters which, based on information supplied by the Wyoming Game and Fish Department, are determined to be presently supporting non-game fish or have the hydrologic and natural water quality potential to support non-game fish.
>
> *Class III*: Those waters which, based on information supplied by the Wyoming Game and Fish Department, are determined as having the hydrologic or natural water quality to support fish (W.W.Q.R.R., Ch. I, §4, 1974).

Specific waters will be classified according to a priority system for classifying those waters which receive pollutants first (*Ibid*., Ch. I, §5, 1974). A stream must have been classified prior to issuance of a permit for discharge into it (*Ibid*).

17.1.4 *Standards*

Specific stream standards have been established for fifteen different parameters (*Ibid*., Ch. I, §6, 1974). Provision has also been made for adoption of additional standards required by existing conditions (*Ibid*). In addition to the stream standards, there are standards which cover effluent water quality.

Effluent standards and limitations for discharge purposes include those state and Federal Water Pollution Control Act Amendments of 1972 standards which control effluent, performance standards, toxic effluent standards, and pretreatment standards (*Ibid*, Ch. II, §2, 1974). Water quality standards which are adopted by reference include state and federal standards which have been approved by the Administrator of the Environmental Protection Agency.

17.1.5 Permit System

Discharge permits are issued by the Department of Environmental Quality in conformity with the requirements of the National Pollutant Discharge Elimination System (NPDES), for point source waste discharge into state waters (Ibid., Ch. II, §1, 1974). Compliance with state law can also be accomplished by application to the U.S. Army Corps of Engineers for a Refuse Act Permit, or by filing a complete NPDES permit application with the EPA (Ibid., Ch. II, §3, 1974). Additional permits are required under state law for such activities as construction of water supply and sewage systems and alteration of various chemical and physical properties of state water (W.S.A. §35-502.18, 1975, Cum. Supp.). Application is to the Water Quality Division of the Department. The permits are issued by the Director of the Department (W.S.A. § 35-502.53, 1975, Cum. Supp.).

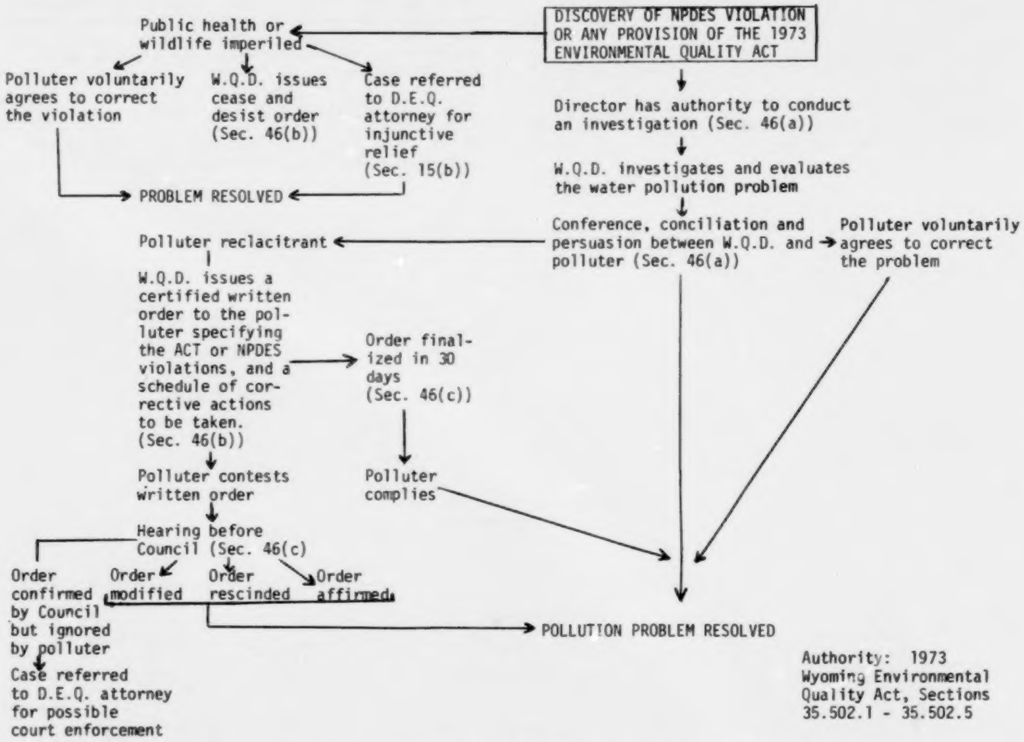
17.1.6 Sanction and Enforcement Measures

If the Division Administrator or Department Director has reason to believe that any persons are violating the act or rules adopted under the act, they are empowered to perform an investigation of the complaint. Furthermore, the Director is given the authority to issue a cease and desist order where it is determined that a violation does exist (W.S.A. §35-502.46, 1975 Cum. Supp.). Upon issuance of such an order it is possible to request a hearing before the Environmental Quality Council upon the merits of the administrative action. Figure 1 illustrates the enforcement actions and alternatives that can be taken under the Environmental Quality Act.

The penalties for violation of the provisions of the Environmental Quality Act range from a fine of up to $10,000 for each day of violation for unintentional or negligent violations, to $25,000 for each day that a willful violation of the act continues, as well as imprisonment for up to one year, or both. In addition, the person responsible for the violation is liable for the reasonable value of the fish, aquatic

Figure 1. Necessary State Action in Controlling Water Pollution in Wyoming

PROGRAM ELEMENT: ENFORCEMENT


DISCOVERY OF NPDES VIOLATION OR ANY PROVISION OF THE 1973 ENVIRONMENTAL QUALITY ACT
Public health or wildlife imperiled
Polluter voluntarily agrees to correct the violation
W.Q.D. issues cease and desist order (Sec. 46(b))
Case referred to D.E.Q. attorney for injunctive relief (Sec. 15(b))
PROBLEM RESOLVED
Director has authority to conduct an investigation (Sec. 46(a))
W.Q.D. investigates and evaluates the water pollution problem
Conference, conciliation and persuasion between W.Q.D. and polluter (Sec. 46(a))
Polluter voluntarily agrees to correct the problem
Polluter reclacitrant
W.Q.D. issues a certified written order to the polluter specifying the ACT or NPDES violations, and a schedule of corrective actions to be taken. (Sec. 46(b))
Order finalized in 30 days (Sec. 46(c))
Polluter contests written order
Polluter complies
Hearing before Council (Sec. 46(c)
Order confirmed by Council but ignored by polluter
Order modified
Order rescinded
Order affirmed
POLLUTION PROBLEM RESOLVED
Case referred to D.E.Q. attorney for possible court enforcement
Authority: 1973 Wyoming Environmental Quality Act, Sections 35.502.1 - 35.502.5

SOURCE: Wyoming Department of Environmental Quality, Water Quality Division. Water Pollution Control in Wyoming (June 20, 1974), Second Edition, p. 8.

life, game or bird life which is destroyed (W.S.A. §35-502.49, 1975 Cum. Supp.). Fines and jail sentences are doubled for convictions of second violations.

Finally, the Department can seek an injunction to halt or prevent a possible violation of the act (Ibid).

17.2 ADMINISTRATION OF WATER QUALITY LAWS

17.2.1 Department of Environmental Quality

Under the provisions of the "Wyoming Environmental Quality Act" (W.S.A.§§35-502.1 to 35-502.56, 1975 Cum. Supp.) the major responsibility for water pollution control in Wyoming is vested with the Water Quality Division, Department of Environmental Quality (W.S.A. §§35-502.18 to 35-502.19, 1975 Cum. Supp.). This legislation was originally enacted by the 1973 Session of the Wyoming Legislature. Formerly, the authority for water quality matters had been delegated to the State Department of Public Health, which still retains some responsibilities in the area of water quality as it pertains to water supply and waste water systems (W.S.A.§§35-186 to 35-187 and 35-196 to 35-200).

The Water Quality Division, one of three divisions which comprise the Department of Environmental Quality (DEQ), is responsible for issuing permits for the following activities which affect water quality:

1. discharge of pollution and wastes;
2. alteration of physical, chemical, radiological biological or bacteriological nature of the water;
3. construction, modification and operation of sewage and other water treatment facilities;
4. any increase in the quantity or concentration of discharges; and
5. construction, installation, modification, and operation of public water supply systems (W.S.A. §35-502.18, 1975 Cum. Supp.).

It is interesting from the historical point to note that when the above legislation was first enacted, the term "pollution" as it was defined for the purpose of water quality specifically exempted "... waters diffused across meadow lands or crop lands for irrigation purposes, or return flows, whether diffused or collected in drains, from such water diffused across meadow or crop lands" (W.S.A. §35-502.3 (c)(i), 1975 Cum. Supp.). This exclusionary provision was deleted from the act's definition of pollution in 1947 (S.L., Ch. 14, §1, 1974), and subsequent regulation of DEQ define pollution to include "...agricultural waste discharged into water" (W.W.Q.D.R. Ch. I, §2(q), 1974).

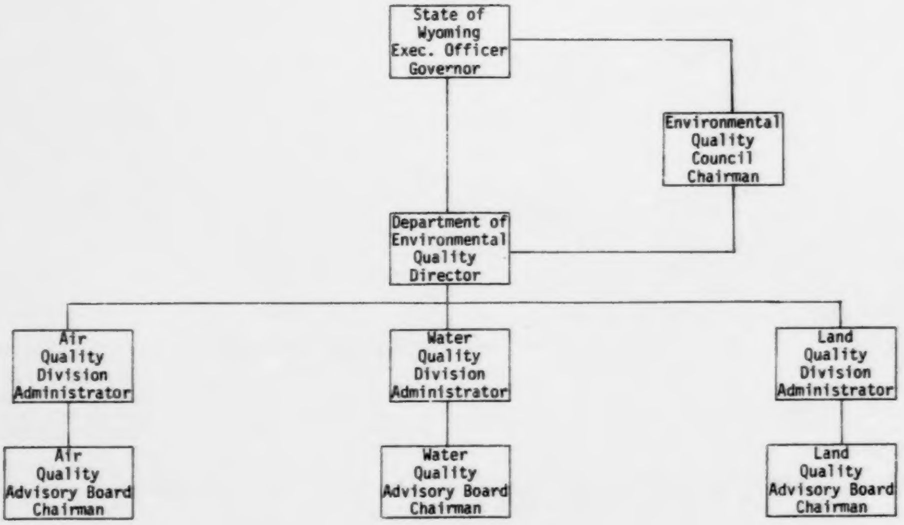
According to the chain of command under the act, the Administrator of the Water Quality Division, subsequent to consultation with the Division's citizen advisory board, is responsible for the recommendation of proposed rules and regulations to the Director of DEQ (W.S.A. §35-502.19, 1975 Cum. Supp.) for later adoption by the Environmental Quality Council (W.S.A. §35-502.19, 1975 Cum. Supp.).

The Environmental Quality Act created an independent seven-member Environmental Quality Council and five-member Water Quality Advisory Board to assist the Division in water pollution control. The Council acts as the hearing board for adoption of rules and regulations, as well as cases or issues which arise under the legislation, rules, regulations, standards, and orders involving the Wyoming Environmental Quality Act (W.S.A. §35-502.12(a)(i), 1975 Cum. Supp.). See Figure 2 for an organizational chart of the water quality entities.

17.2.2 Additional Agency Involvement

As mentioned earlier in this section, prior to the enactment of the 1973 Environmental Quality Act, water

Figure 2. Department of Environmental Quality Organizational Chart


State of Wyoming Exec. Officer Governor
Environmental Quality Council Chairman
Department of Environmental Quality Director
Air Quality Division Administrator
Water Quality Division Administrator
Land Quality Division Administrator
Air Quality Advisory Board Chairman
Water Quality Advisory Board Chairman
Land Quality Advisory Board Chairman

quality programs were the responsibility of other state agencies. Specifically, these agencies were the Water Pollution Advisory Council and the Sanitary Engineering Services Branch of the Division of Health and Medical Services (W.S.A. §35-503.7(c), 1975 Cum. Supp.). The duties and authority of these bodies was later incorporated in the DEQ (Ibid).

The Division of Health has retained authority in several areas closely related to water quality. First, the Board of Health is directed to consult with municipalities and private individuals on the most advisable method for developing water supply and water treatment facilities (W.S.A. §35-187). The Division of Health also has authority to impose fines for contamination of streams and lakes from industrial activities (W.S.A. §35-196). Finally, the Division is empowered to set standards for public drinking water supplies and to investigate and determine liability for violation of those standards (W.S.A.§§35-197 to 35-200). Values which these standards are designed to protect include fish, domestic, stock watering, irrigation, and any other use for which water can be appropriated under state law (W.S.A. §35-187).

Allocation and distribution of water and administration of water rights is vested in the Office of State Engineer and the Board of Control. The state is divided into four water divisions, each headed by a water division superintendent who administers water law within the division (W.S.A. §41-55). The State Engineer and four superintendents are appointed by the governor (Wyo. Const. Art. 8, §5 and W.S.A. §41-55). Together, these five officials comprise the Board of Control. See Figure 3 for a diagram of the state agencies involved with water quantity and quality control.

The duties of the State Engineer include general supervision of the waters of the state and offices connected with the distribution of these waters, issuing permits to use water, making proper preparations for adjudications of water rights by the Board, and coordinating a state water and related resources plan. He is also president of the Board of Control, compact commissioner on several interstate streams, advisor on water matters to various agencies, and member of numerous boards and committees affected by water laws.

The Board of Control supervises the appropriation, distribution and division of waters of the state and has quasi-judicial power to adjudicate water rights. The Board also rules on amendments, changes and transfers of water rights and decides matters of abandonment and statutory forfeiture.

To assist the division superintendents, each division is divided into districts under the charge of water commissioners. These commissioners are required to divide and control the use of water and prevent waste or excessive use (W.S.A. §41-63).

17.3 SPECIAL LEGISLATION

Wyoming has passed enabling legislation for a number of special districts which are intended to function at the local level, primarily as administrative and revenue generating units of government, in the promotion of water quality goals.

17.3.1 Health Districts

Health Districts are primarily concerned with preventing disease and promoting general public health by controlling local water quality (W.S.A.§§35-27 to 35-35). These districts can be created either by resolution of county and municipal governing boards, or by voter referendum.

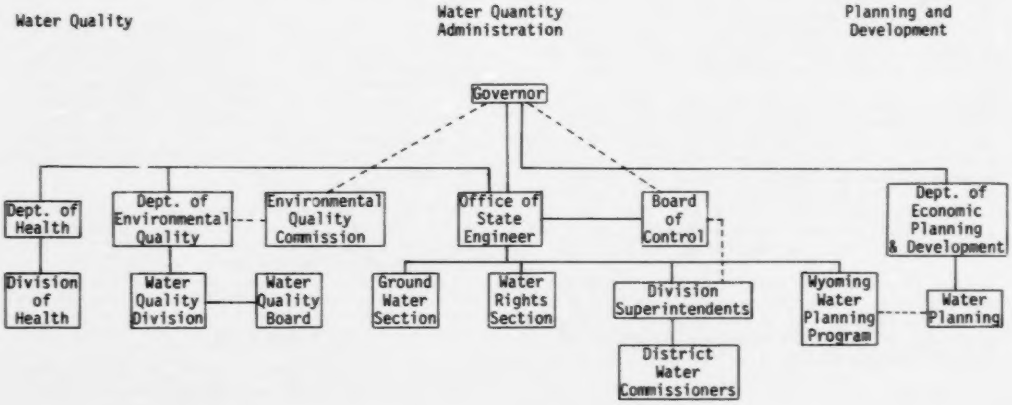
Operation of the Health District is under the supervision of an elected board of directors. Financing is derived from a maximum mill levy of one mill and general fund appropriations.

Presently, four Health Districts have been established under the above statute (Stickley, 1976).

17.3.2 Sanitary and Improvement Districts

Sanitary and Improvement Districts can be organized in unincorporated areas to establish and operate water supply and sewage disposal systems (W.S.A.§§35-141 to 35-165). These districts are excluded from exercising territorial jurisdiction in cities, towns and any tract larger than 20 acres which is primarily used for industrial purposes.

Figure 3. Wyoming Water Agencies and Major Functions



Districts are organized by election following submission of a petition to the state district court for the area where the district will be located. Sanitary and Improvement Districts can levy up to one mill on taxable property within the district. Furthermore, the district can enter into service contract arrangements with other local governments.

Five Sanitary and Improvement Districts have been formed under this act.

17.3.3 Water and Sewer Districts

The purpose for organizing Water and/or Sewer Districts is to furnish domestic water supply, sewage and drainage systems in unincorporated areas (W.S.A. §§41-479.1 to 41-479.5, 1975 Cum. Supp.). Land located within municipalities or industrial tracts larger than 20 acres is exempt from district participation. It is also possible to implement local Sanitary and Improvement Districts under this legislation.

Organization of these districts is achieved under the standard procedure of an election following district court approval of a voters petition. Operations are financed by a mill levy of up to eight mills on real property, sales of service and user charges.

Fifteen Water and Sewer Districts have been organized in Wyoming.

17.3.4 Drainage Districts

Drainage Districts are authorized to construct and maintain drains, ditches, and levies, and to reclaim or otherwise benefit any "wet or overflowed lands" (W.S.A. §§41-335 to 41-479). These districts are formed following district court approval of a landowner petition. It is also possible to form joint Irrigation-Drainage Districts under this legislation.

There are currently twenty Drainage Districts in Wyoming.

17.4 RELATED LEGISLATION

17.4.1 Industrial Development Information and Siting Act

The most significant legislation related to water quality is the Industrial Development Information and Siting Act (W.S.A. §§35-502.75 to 35-502.94, 1975 Cum. Supp.) enacted in 1975. This legislation requires that large-scale energy production and other large industrial facilities obtain a permit from the State Industrial Siting Council prior to construction and operation of activities controlled by this Act.

Specific water quality consideration under this Act includes plans for sewer and water facilities, water supply plans (W.S.A. §35-502.81, 1975 Cum. Supp.) and a detailed study by the siting council of the impact on water resources from the proposed development (W.S.A. §35-502.84, 1975 Cum. Supp.). The applicant for an industrial siting permit must inform the siting council of other state or federal permits and approvals which will be required by the facility.

Wyoming law makes it a misdemeanor to place refuse and dead animals into rivers and ditches (W.S.A. §35-462 to 35-463). It is also a criminal misdemeanor to dispose of sawdust in a watercourse within the State of Wyoming (W.S.A. §35-464).

17.4.2 Wyoming Farm Loan Board

The original Farm Loan Act was passed by the Wyoming Legislature in 1921 and the following purpose was set forth:

> For the purpose of fostering and encouraging agriculture, dairying and livestock raising in the State of Wyoming and development and improvement of farm lands ... (Wyo. Stat. §11-610).

In 1955, the legislature expanded the role of the Wyoming Farm Loan Board (WFLB) to include the issuance of water development loans (Wyo. Stat. §§11-655 to 11-658). This expansion also directed the executive director of the State Department of Economic Planning and Development (DEPAD) to advise on and approve potential loans which the WFLB is requested to make in the area of water development (Wyo. Stat. §11-656). A significant change occurred in 1975 as an amendment to W.S.A. §11-655. This amendment provides that loans up to $150,000 can be made to individuals or organized water users for development of small projects (S.L. 1975, Ch. 122, §1). Small projects may include lateral lining, turnouts, sprinkler systems, etc. The consequences may not only benefit water quantity by increasing the efficiency rate, but also improve the quality of return flows.

The most obvious disadvantage to financing water resources development by the WFLB is that the board only approves or disapproves applications, with the advice of the executive director of DEPAD, and lacks any authority to initiate coordination and planning (Stickley, 1976). Also, the WFLB is dependent upon the legislature to set the ceiling on the amount of funds which are to be made available from the permanent land funds of the state for water development.

17.5 SUMMARY OF REGULATIONS AFFECTING AGRICULTURE

As discussed earlier, the definition of "pollutant" in both the Water Quality Standards for Wyoming (W.W.Q.R.R., Ch. I, §2(q), 1974) and Chapter II, Discharges/Permit Regulations for Wyoming (Ibid, Ch. II, §2(o)) of the Wyoming Department of Environmental Quality applies to agricultural waste which is discharged into water. Furthermore, state water quality standards recognize salinity as a water quality parameter which is affected by the processes of (1) salt-loading due to man-made sources, and (2) salt concentration due to loss of water by consumptive use (Ibid, Ch. I, §29).

Regulations state that "emphasis will be placed on controlling high salinity through improved water management and conservation practices" (Ibid). The State of Wyoming is a member of the Colorado River Basin Salinity Control Forum and has adopted that group's policy, in state water quality regulation, of developing and adopting a plan of implementation for controlling salinity in the Colorado River System by October 18, 1985 (Ibid).

State regulations covering permits for point-source waste discharges into waters requires approval for any extensions, modifications, or additions to concentrated animal feeding operations (Ibid, Ch. II, §3(a)(3)). This policy was adopted in compliance with the requirements of the National Pollutant Discharge Elimination System for point source discharges into state waters (Ibid., Ch. II, §1).

Finally, while no standards have been specifically adopted to cover water quality problems created by agricultural return flow, it should be remembered that it was not until 1974 that the statutory prohibition on such regulation was removed (Ibid., Ch.II, §1).

17.6 CASE LAW APPLICABLE TO AGRICULTURE

Water quality issues as they relate to agriculture have received little appellate review either in a historical context or under the more recent environmental quality legislation.

The earliest reported decision which considered water quality as a factor related to agricultural water use was Sussex Land and Livestock Co. v. Midwest Refining (294 F. 597 (D. Wyo. 1923) affirming 276 F. 932 (D. Wyo. 1922)). In that case, an oil well operator allowed oil to escape from his well field into a stream which overflowed causing damage to plaintiff's pasture. The Federal District Court interpreted Article 8, Section 1 of the Wyoming Constitution and state statutes which provide for prior appropriation to include the concept of quality as well as quantity in the nature of the right, and that an oil well producer has no right to deteriorate the quality of water in a stream as against downstream users having priority of right (294 F. 597, 603 (D. Wyo. 1923)).

A later state court ruling in Mitchell Irr. Dist. v. Whiting (136 P.2d 502, 1943) also employed the concept of water quality as a component of a right acquired under the doctrine of prior appropriation in reaching its conclusion that a prior appropriator cannot interfere with the rights of subsequent appropriators on the stream so long as the senior user revives all the water of satisfactory quality to the full extent of his appropriation (136 P.2d 502, 508, 1943).

There are no reported decisions on actions which have arisen under the present Wyoming water quality legislation. At the time of this report, the Wyoming Supreme Court has recently heard oral argument on the case of the City of Torrington v. Wyoming Department of Environmental Quality (136 P.2d, 502, 508, 1976). which is the first appeal taken under the 1973 Environmental Quality Act. The suit seeks to test necessity of obtaining solid waste disposal and water discharge permits for a municipal waste disposal system located adjacent to a watercourse.

Although over a dozen actions have been filed in district court by DEQ, the actions have been resolved by the payment of fine and application for discharge permit by the offending party.

17.7 INFORMATION SOURCES

Ohrenschall, John C. and Edgar A. Imhoff, "Water Law's Double Environment: How Water Law Doctrines Impede the Attainment of Environmental Enhancement Goals," 5 Land & Water L. Rev. 259, 1970.

Shelledy, W. R., Jr., "Agricultural Irrigation and Saline Quality of Water," 5 Land & Water L. Rev. 490, 1970.

Ausness, Robert C., "A Survey of State Regulation of Dredge and Fill Operations in Nonnavigable Waters," 8 Land & Water L. Rev. 451, 1973.

Nixon, Sunny Jeane, "Groundwater Pollution in the Western States--Private Remedies and Federal and State Legislation," 8 Land & Water L. Rev. 537, 1973.

Orf, Ted E., "The Wyoming Water Quality Act and the Federal Water Pollution Control Act Amendments of 1972: A Comparison, 9 Land & Water L. Rev. 79, 1974.

Stickley, Dennis C., "Alternatives for Financing Water Resources Development and Related Issues," Governor's Interdepartmental Water Conference, Cheyenne,Wyo.,1976.

_______, Water Pollution Control in Wyoming, Dept. of Environmental Quality, Cheyenne, Wyo., 1973.

Hause, V. W. and J. E. Cahill, Everybody's Guide to Wyoming Water Administration, Vul. 479, Agr. Extension Service, Univ. of Wyo., Laramie, Wyo., Oct. 1967.

_______, A Water Development Program for Wyoming, Office of State Engineer, Cheyenne, Wyo., Oct. 1974.

APPENDIX B

STATE AGENCIES AND PERSONNEL CONSULTED

ARIZONA

Department of Health Services
Dr. Ronald L. Miller, Chief
Bureau of Water Quality Control
Environmental Health Services
1740 West Adams Street
Phoenix, Arizona 85007
(602) 271-5453

State Land Department
Fritz Ryan, Director
Water Rights Division
1624 West Adams Street
Phoenix, Arizona 85007
(602) 271-4629

Arizona Water Commission
Wes Steiner, State Engineer
22 North Central Avenue
Phoenix, Arizona 85004
(602) 253-7561

CALIFORNIA

State Water Resources Control Board
Donald Maughan, Chairman*
William Attwater, Chief Counsel, Legal Division
Harry Schueller, Supervising Engineer, Legal Division
1416 9th Street
Sacramento, California 95801
*(916) 445-5471

Central Valley Regional Water Quality Control Board
Gene Merrill, Land and Water Resources Specialist*
Ron Vanderpool, Chris Lynds, Jim Robertson, staff
3201 South Street
Sacramento, California 95816
*(916) 445-0270

Colorado River Board of California
Myron Holbert, Chief Engineer
107 South Braudun
Room 8103
Los Angeles, California 90012
(213) 620-4480

COLORADO

Department of Health
Frank Rozich, Director*
Fred Matter and Don Carlson, staff
Division of Water Quality

Evan Dildine, Technical Secretary**
Water Quality Control Commission
4210 East 11th Avenue
Denver, Colorado 80220
(303) 388-6111, *ext. 231, and ** ext. 378

Department of Natural Resources
Clarence Kuiper, State Engineer and Director
Division of Water Resources
1313 Sherman Street
Denver, Colorado 80203
(303) 892-3581

IDAHO

Department of Health and Welfare
Al Murray, Chief
Robert Brown, Assistant Chief*
Environmental Services
Division of Environment

Chuck Foss, Department Counsel
Frank Kline, Idaho SCS, but on loan to DOE
State House
Boise, Idaho
*(208) 384-2433

Department of Water Resources
C. Steven Alfred, Planning Director*
John Hammond, Economist
373 West Franklin
Boise, Idaho
*(208) 384-2212

KANSAS

Department of Health and Environment
Jack Burris, Director
Water Quality Control Section
Division of Environment
535 Kansas Avenue
Topeka, Kansas 66612
(913) 296-3825

Board of Agriculture
Guy E. Gibson, Chief Engineer
Division of Water Resources
1720 South Topeka Avenue
Topeka, Kansas 66612
(913) 296-3251

MONTANA

Department of Health and Environmental Services
D. G. Williams, Chief
Water Quality Bureau
Environmental Sciences Division
Cogswell Building
Helena, Montana 59601
(406) 449-2406

Department of Natural Resources and Conservation
William F. Throm, Assistant Administrator
Water Resources Division
Natural Resources Building
32 South Ewing
Helana, Montana 59601
(406) 449-2872

NEBRASKA

Department of Environmental Control
Robert Wall, Chief*
Clark Haberman, Ecologist
Water Pollution Control Division
1424 "P" Street
Lincoln, Nebraska 68509
*(402) 471-2186

NEBRASKA (con't)

Department of Water Resources
Marion E. Ball, Director
1420 "P" Street
Lincoln, Nebraska 68509
(402) 471-2363

NEVADA

Department of Human Resources
Ernest G. Gregory, Chief
Environmental Health Services
201 South Fall Street
Carson City, Nevada
(702) 885-4670

Department of Conservation and Natural Resources
Roland Westergard, State Engineer
Division of Water Resources
201 South Fall Street
Carson City, Nevada 89701
(702) 885-4380

NEW MEXICO

Environmental Improvement Agency
Charles Nylander, Chief*
Richard Holland, Michael Snavely, John Dudley, staff
Water Quality Division
Post Office Box 2348
Santa Fe, New Mexico 87503
*(505) 827-3121

Office of State Engineer
Carl Slingerland, Deputy State Engineer*
Paul Bloom, Legal Advisory to State Engineer
Bataan Memorial Building
Santa Fe, New Mexico 87503
*(505) 827-2127

Al Utton
Professor of Law and Editor, Natural Resources Journal
College of Law
University of New Mexico
Albuquerque, New Mexico 87100

NORTH DAKOTA

Department of Health
Norman Peterson, Director
Division of Water Supply and Pollution Control
State Capital Building
Bismark, North Dakota 58505
(701) 224-2386

State Water Commission
Murray Saqsveen, Director
Legal Services
900 East Boulevard
Bismark, North Dakota 58505
(701) 224-2750

OKLAHOMA

State Department of Health
Charles B. Newton, Chief*
F. M. Keene, Assistant Chief
Water Quality Service
N.E. 10th Street and Stonewall
Oklahoma City, Oklahoma 73105
*(405) 271-6315

Oklahoma Water Resources Board
Jim Shirazi, Chief*
Harold Springer, staff
Water Quality Division
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
*(405) 521-3945

OREGON

Department of Environmental Quality
Kent C. Ashbaker, Supervisor
Water Pollution Control Section
1234 S.W. Morrison
Portland, Oregon 97205
(503) 229-5309

Department of Water Resources
Larry Jebousek, Administrator
Water Rights Division
1178 Chemeketa Street
Salem, Oregon 97301
(503) 378-3066

Harold Henigson
Attorney for Irrigation Districts
106 Main Street
Nyssa, Oregon
(503) 372-2268

SOUTH DAKOTA

Department of Environmental Protection
Richard L. Howard, Chief
Water Quality Program
State Office Building #2
Pierre, South Dakota 57501
(605) 224-3351

Department of Natural Resources Development
Vern W. Butler, Secretary
Office Building #2
Pierre, South Dakota 57501
(605) 224-3151

TEXAS

Texas Water Quality Board
Don Spraggins, Supervisor, Agricultural Branch*
Nicholas, Murphy, General Counsel
Chesley Blevins, Assistant Director, Hearings Branch
Margaret Currie, Assistant General Counsel
Tom Remaby, Chief, 208 Planning
1720 North Congress Avenue
Austin, Texas 78711
*(512) 475-2651

Texas Water Rights Commission
Joe Carter, Chairman*
Bob Schneider, Executive Director
Tim Brown, Legal Counsel
Al D'Arrezo, Ken Jones, Jerry Boyd, Environmental Specialists
Steven F. Austin State Office Building
Austin, Texas 78711
*(512) 475-2453

UTAH

Department of Social Services
Lynn Thatcher, Director*
Calvin Sudweeks, Jay Pitkin, Bill Tate, and
Duke Hansen, staff
Bureau of Water Quality
Division of Health
Environmental Health Services Branch
72 East 4th Street
Salt Lake City, Utah 84113
*(801) 533-6146

Department of Natural Resources
Stanley Green, Assistant State Engineer*
Bob Morgan, staff
Division of Water Rights
442 State Capital
Salt Lake City, Utah 48114
*(801) 328-6071

WASHINGTON

Department of Environment
John Spencer, Assistant Director of Office of Water
Programs and Director of Water Rights*
Glen Friedler, Director, Division of Water Quality
Management
Chuck Carelli, Water Quality Planning Section
Olympia/Lacey, Washington 98504
*(206) 753-2240

Washington State Conservation Commission
Wayne Reid, Executive Secretary
Olympia/Lacey, Washington 98504

Ralph Johnson
Professor and Attorney at Law
University of Washington
Seattle, Washington 98105

WYOMING

Department of Environmental Quality
William Garland, Chief
Water Quality Control Division
State Office Building
Cheyenne, Wyoming 82002
(307) 777-7781

State Engineers Office
George Christopulos, State Engineer
State Office Building
Cheyenne, Wyoming 82002
(307) 777-7354

Frank Trelease
Professor of Water Law
College of Law
University of Wyoming
Laramie, Wyoming 82050

APPENDIX C

WATER NEWSLETTERS AND ASSOCIATIONS

NATIONAL

Water Resources Congress
955 L'Enfant Plaza, North
Washington, D.C. 20024

National Water Resources Association
955 L'Enfant Plaza, North
Suite 1202
Washington, D.C. 20024

REGIONAL/SPECIAL

Aqualante Newsletter
Upper Colorado River Commission
355 South Fourth East Street
Salt Lake City, Utah 84111

EPA-LOG
Environmental Protection Agency
1860 Lincoln Street
Denver, Colorado 80203

Westwater--Notes on Water Research in Western Canada
Westwater Research Centre
University of British Columbia
Vancouver V6T 1W5
Canada

Public Information Fact Sheet, Omaha District
Department of the Army
U.S. Army Engineer District, Omaha
Corps of Engineers
6014 U.S. Post Office and Courthouse
Omaha, Nebraska 68102

Natural Resources Law Newsletter
Section of Natural Resources Law
American Bar Association
1155 East Sixtieth Street
Chicago, Illinois 60637

Rocky Mountain Mineral Law Newsletter
Rocky Mountain Mineral Law Foundation
Fleming Law Building
University of Colorado
Boulder, Colorado 80302

STATE NEWSLETTERS/USER ASSOCIATIONS

California--

METER
Metropolitan Water District of Southern California
Post Office Box 54153
Los Angeles, California 90054

Western Water
Association of California Water Agencies
1127-11th Street
Suite 305, Eleventh & L
Sacramento, California
Aqueduct
Metropolitan Water District of Southern California
1111 Sunset Boulevard
Los Angeles, California

Colorado--

Colorado Water News
State Engineer
Division of Water Resources
1313 Sherman Street
Denver, Colorado 80203

Colorado River Association Newsletter
Colorado River Association
417 South Hill Street
Los Angeles, California 90013

Colorado Water Congress Newsletter
Colorado Water Congress
5600 South Syracuse Circle, #311
Englewood, Colorado 80110

Idaho--

Idaho Environmental Quarterly
Division of Environment
Idaho Department of Health & Welfare
Statehouse
Boise, Idaho 83720

IWAU Alert, The WELL Report and Newsletter
Idaho Water Users Association
4706 Fairview Avenue
Boise, Idaho 83704

Nebraska--

The DEC Newsletter
Nebraska Department of Environmental Control
Box 94653 State House Station
1424 "P" Street
Lincoln, Nebraska 68509

Oklahoma--

News from Oklahoma Water Resources Board
Oklahoma Water Resources Board
Fifth Floor - Jim Thorpe Building
Oklahoma City, Oklahoma 73105

South Dakota--

Earth Bound
South Dakota Department of Environmental Protection
Pierre, South Dakota 57501

Texas--

The Cross Section
High Plains Underground Water Conservation District No. 1
2930 Avenue Q
Lubbock, Texas 79405

Utah--

Utah Water User's Association
38 E. Fourth Street
Bountiful, Utah 84010

Utah Environmental News
Utah State Division of Health
Bureau of Environmental Health
44 Medical Drive
Salt Lake City, Utah 84113

Wyoming--

Wyoming Water Flow Newsletter
Wyoming Water Development Association, Inc.
1905 Spring Creek Drive
Laramie, Wyoming 82070